



Remedial Investigation Report

Terminal 115 Plant 1 Parcel A: West Duwamish CSO Control Project

FINAL

August 18, 2023



King County

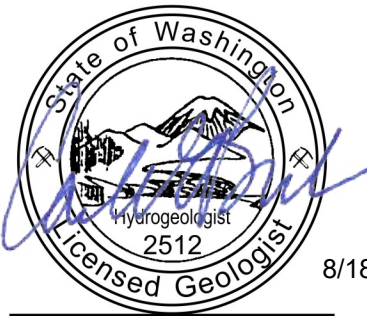
Protecting Our Waters

Doing our part on rainy days

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Acronyms

Aspect	Aspect Consulting, LLC
AO	Agreed Order
BTEX	benzene, toluene, ethylbenzene, and xylenes
bgs	below ground surface
COC	contaminants of concern
COPC	contaminants of potential concern
cPAH	carcinogenic polycyclic aromatic hydrocarbon
CSM	conceptual site model
CSO	combined sewer overflow
DQR	Data Quality Review
Ecology	Washington State Department of Ecology
EPA	U.S. Environmental Protection Agency
HMCA	Hazardous Materials Corridor Assessment
IEC	issues of environmental concern
LDW	Lower Duwamish Waterway
mg/kg	milligrams/kilogram
µg/L	micrograms per liter
MTCA	Model Toxics Control Act
NGVD29+100 feet	National Geodetic Vertical Datum of 1929 plus 100 feet
PAH	polycyclic aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCUL	preliminary cleanup level
PID	photoionization detector
PLPs	Potentially Liable Parties
QA/QC	quality assurance and quality control
RI	Remedial Investigation
ROD	Record of Decision
SVOC	semivolatile organic compound
SEPA	State Environmental Policy Act
T115	Terminal 115
TEE	terrestrial ecological evaluation
TEQ	toxic equivalent concentration
TPH	total petroleum hydrocarbon
UCL	upper confidence limit
USCS	Unified Soil Classification System
VOC	volatile organic compound
WAC	Washington Administrative Code

Executive Summary

This report presents the results of the remedial investigation (RI) for Parcel A of Terminal 115 (T115) Plant 1 Cleanup site, which is located on the Terminal 115 (T115) Property that is generally located at 6000 West Marginal Way SW on the western shore of the Lower Duwamish Waterway (LDW) in Seattle, Washington (Figure 1). The T115 Property is owned by the Port of Seattle and the subject of an Agreed Order (AO) between the Washington State Department of Ecology (Ecology) and the Potentially Liable Parties (PLPs), consisting of the Port of Seattle and the Boeing Company. Ecology is the lead agency for reducing or eliminating ongoing upland sources of contamination to the LDW, while the U.S. Environmental Protection Agency (EPA) oversees the cleanup of contaminated sediments and surface water. The AO requires the PLPs to investigate environmental conditions at the T115 Plant 1 Cleanup site and develop a draft cleanup action plan.

Parcel A consists of approximately 1.33 acres of the T115 Plant 1 Cleanup site that is located at the intersection of SW Michigan Street and 2nd Avenue SW (Figure 2). King County has identified Parcel A as a preferred site for the West Duwamish Combined Sewer Overflow (CSO) Control Project, and it is herein referred to as the Project Property. The Project Property has never been developed with built structures and is currently a gravel parking lot, surrounded by a chain link fence, that is used for commercial truck and trailer parking. The Project Property is physically separated from T115, a 99-acre marine cargo facility, by SW Michigan Street. The Project Property is approximately 350 feet southwest of the west bank of the Duwamish River and is within the LDW 1st Avenue South Storm Drain source control area (Ecology, 2013), which is separate and distinct from the T115 source control area (Ecology, 2011b) (Figure 3). The RI objective is to characterize the nature and extent of potential contamination at the Project Property in accordance with Washington Administrative Code (WAC) 173-340-350 to determine whether cleanup actions are warranted.

Historical information for the main portion of the T115 Property (not including the Project Property) indicates up to 20 feet of fill soil, including excavated riverbank material, dredge spoils from the river channel, and unknown fill, used to fill a river oxbow following channelization and straightening of the Duwamish River in the 1910s and 1920s (SES, 2011). During the site characterization of the Project Property, fill soil was observed from ground surface to depths of approximately 13 feet below ground surface (bgs). The fill consists of a medium stiff, low plasticity silt with varying amounts of sand and very loose to loose sand with varying amounts of silt. The fill soil observed on the Project Property during the site characterization work is consistent with, and interpreted to be, dredged sediments from the Duwamish River.

Between June 2017 and May 2023, site characterization work was conducted on the Project Property to evaluate the nature and extent of fill and the presence, nature, and extent of contaminants in soil and groundwater on the Project Property attributable to the placement of dredge fill, and potential migration of contaminants in groundwater from main T115 Plant 1 Cleanup site to the Project Property.

The RI included collection of soil and groundwater samples for laboratory analysis of the preliminary contaminants of potential concern (COPCs) and comparison of analytical results to screening criteria to first identify COPCs and then contaminants of concern (COCs), as follows:

1. Preliminary COPCs: Those contaminants known to be present in LDW dredge soils and/or documented and/or suspected to be associated with releases on the main portion of the T115 Plant 1 Cleanup site. All RI samples collected from the Project Property were analyzed for the preliminary COPCs.
2. COPCs: Contaminants detected in soil or groundwater at concentrations exceeding the lowest of the potentially applicable LDW Preliminary Cleanup Levels (PCULs) Ecology developed for use in the initial screening of environmental chemical data during an RI to identify COPCs. The COPCs were then carried through for further evaluation in consideration of site-specific transport and exposure pathways in accordance with the Model Toxics Control Act (MTCA) (WAC 173-340), the PCUL Document (Ecology, 2023a), and the LDW Source Control Strategy (Ecology, 2016c), by media.

3. COCs: Contaminants detected in soil or groundwater at concentrations exceeding the site-specific screening levels, identified based on the site-specific evaluation of transport and exposure pathways. Site-specific screening levels were developed for screening of the COCs based on these known or potentially complete transport and exposure pathways in accordance with MTCA and the PCUL Document.

The potential transport and exposure pathways, evaluated for COCs in accordance with the PCUL Document and considering both current and likely future use, consist of the following:

- Direct contact with COCs in soil by employees or construction workers with exposure through incidental ingestion, inhalation, or dermal absorption.
- Terrestrial ecological receptor exposure (unrestricted land use) to COCs in soil.
- Direct contact with COCs in groundwater through ingestion, transport of contaminated groundwater to surface water, and partitioning of groundwater contamination to sediment. Although it is unlikely that groundwater on the Project Property is potable, nonpotability has not been determined. Although the Project Property is not located adjacent to surface water, the proximity to the Duwamish River indicates that groundwater may discharge as surface water.

Empirical data indicate that contaminants are not leaching from soil to groundwater at levels that result in an exceedance of the lowest of the potentially applicable LDW groundwater PCULs, so soil criteria for the protection of groundwater are not applicable. The soil eroding to sediment potential transport pathways from the Project Property to the LDW is not complete because of the distance to the LDW and the surface conditions between the Project Property and the LDW. In addition, volatilization to indoor air is not a complete pathway because of the lack of volatile COCs at concentrations exceeding the PCULs for indoor air protection at the Project Property.

Arsenic, chromium, and selenium are the only COCs in soil at the Project Property that were detected at concentrations exceeding the site-specific screening levels based on direct comparison of individual data points. However, a statistical analysis completed in accordance with WAC 173-340-740 indicates arsenic and chromium in Project Property soil comply with the site-screening levels. Selenium is naturally occurring and the concentrations reported in Project Property soil are within the range of concentrations that occur in the vicinity of Parcel A as indicated by the results of local studies, and the concentrations detected in Project Property soil do not pose a risk to human health. Therefore, arsenic, chromium, and selenium are not COCs for the Project Property.

Copper and hexachlorobenzene are the only COCs detected in groundwater at the Project Property above the laboratory practical quantitation limits and exceeding the site-specific screening levels. However, copper and hexachlorobenzene were each detected above the site-specific screening level in groundwater during a single monitoring event at a single well (not reproducible there), and these detections are not considered representative of overall groundwater quality at the Project Property. Therefore, copper and hexachlorobenzene are not COCs for the Project Property. Mercury, pentachlorophenol, bis(2-ethylhexyl) phthalate, and cPAHs have been detected in groundwater at estimated concentrations above the site-specific screening levels but below the practical quantitation limits. MTCA (WAC 173-340-720[7][c]) stipulates that cleanup levels shall not be set at concentrations below the practical quantitation limits and further indicates that, when a hazardous substance is detected below the practical quantitation limit and the practical quantitation limit is higher than the cleanup level, the cleanup level shall be considered to have been attained (WAC 173-340-707[2]). Mercury, pentachlorophenol, bis (2-ethylhexyl) phthalate, and cPAHs in groundwater are, therefore, in compliance with MTCA, and are not COCs for the Project Property.

The results of the RI indicate that there is no current or potential future risk to human health or the environment and thus, there are no COCs requiring cleanup.

This executive summary should be used only in the context of the full report.

1 Introduction

This report presents the results of the remedial investigation (RI) for Parcel A of Terminal 115 (T115) Plant 1 Cleanup Site,¹ located on the T115 Property² that is generally located at 6000 West Marginal Way SW on the western shore of the Lower Duwamish Waterway (LDW) in Seattle, Washington, and owned by the Port of Seattle (Figure 1). In 2014, the U.S. Environmental Protection Agency (EPA) issued a Record of Decision (ROD) for the cleanup of contaminated sediments in the LDW Superfund site (EPA, 2014). While the EPA oversees cleanup of the LDW, the Washington State Department of Ecology (Ecology) is the lead agency for reducing or eliminating ongoing upland sources of contamination to the LDW. In 2020, Ecology negotiated Agreed Order No. DE 18064 (AO) with the Port of Seattle and the Boeing Company, together the Potentially Liable Parties (PLPs) for the T115 Plant 1 Cleanup Site, that requires them to investigate environmental conditions and develop a draft cleanup action plan (Ecology, 2020). The real property boundary of the tax parcel owned by the Port of Seattle (herein referred to as the T115 Property) is shown on Figure 1 and the approximate T115 Plant 1 Cleanup Site property boundary including the Parcel A, as defined in the AO, is shown on Figure 2. Parcel A is physically separated from the rest of the T115 Plant 1 Cleanup Site by SW Michigan Street (Figure 1).

Parcel A consists of approximately 1.33 acres of land and is located at the southeast corner of the intersection of SW Michigan Street and 2nd Avenue SW (hereafter referred to as the Project Property; Figure 2). The Project Property has been identified by King County for the West Duwamish Combined Sewer Overflow (CSO) Control Project (CSO Control Project). The CSO Control Project objective is to control discharges from the West Michigan Street Regulator Station Overflow and T115 Overflow to the Washington State control standard of one untreated discharge per year on a rolling 20-year average (control standard). The Project Property has been selected as a preferred combined sewage storage tank site and the CSO Control Project is actively in the design phase.

The Project Property is part of the Port of Seattle's T115 Property, which comprises a total of 99 acres of land that currently operates as a marine cargo facility, including commercial and industrial warehouses, storage, and processing facilities (Figure 1). The Project Property is a gravel parking lot surrounded by a chain-link fence that is currently used for commercial truck and trailer parking. The Project Property is approximately 350 feet southwest of the west bank of the Duwamish River and is within the LDW 1st Avenue South Storm Drain source control area (Ecology, 2013), which is separate and distinct from the T115 source control area (Ecology, 2011b) (Figure 3). The general Project Property information is summarized in Table 1.

King County is in negotiations with the Port of Seattle to purchase the Project Property to construct the combined sewage storage tank. This RI Report has been prepared to meet the requirements of the Model Toxics Control Act (MTCA) cleanup regulation, Washington Administrative Code (WAC) Chapter 173-340. The RI Report has been prepared in general accordance with Ecology's Remedial Investigation Checklist guidance (Ecology, 2016b).

1.1 Purpose

The objective of the RI is to characterize the nature and extent of potential contamination at the Project Property in accordance with WAC 173-340-350. The data collected during the RI are used to develop a conceptual site model (CSM), which identifies the potential and suspected sources of contaminants, the

¹ The T115 Plant 1 Cleanup Site is an area defined by Ecology in the Agreed Order and consists of the majority of the Terminal 115 Property, including the Project Property (Figure 2). A small portion of the Terminal 115 Property, located at the northwest corner, is a separate MTCA cleanup site (Schultz Distributing T115 Cleanup Site).

² The T115 Property is the real tax parcel that is owned and operated by the Port of Seattle (Figure 1) and includes both the T115 Plant 1 Cleanup Site, including the Project Property, and the Schultz Distributing T115 Cleanup Site.

nature and extent of the contaminants, the impacted media, and potential exposure pathways and receptors. The outcome of the RI information determines whether cleanup actions are warranted.

1.2 Project Property History

Prior to the 20th century, the Duwamish River valley was used for farming, pasture, logging, and subsistence gathering (SES, 2011). After the channelization and dredging of the Duwamish River in the early 20th century, the areas surrounding the river were developed for large-scale industrial use. The T115 Property includes up to 20 feet of fill soil, including excavated riverbank material, dredge spoils from the river channel, and unknown fill, used to fill a river oxbow following channelization and straightening of the Duwamish River in the 1910s and 1920s (SES, 2011). Although the T115 Property has been used extensively for commercial and industrial purposes since 1909, the Project Property has remained largely undeveloped since 1894 (SES, 2011). There is no indication that the Project Property has been used in conjunction with operations on the T115 Property at any point in history.

The 2011 Environmental Conditions Report (SES, 2011) included a complete history of the T115 Property, including a review and evaluation of current and historical spills and releases, land development activities, and operations on and immediately adjacent to the T115 Property, to identify issues of environmental concern (IEC) and evaluate pathways for migration of hazardous or toxic substances to the LDW (SES, 2011). The 2011 Environmental Conditions Report did not identify any IEC, defined as current or historical property use that may have resulted in the release of hazardous or potentially hazardous substances to soil, air, groundwater, sediments, or surface water, associated with the Project Property (SES, 2011).

Based on a review of historical aerial photographs, the west side of the Project Property was occupied by a road in 1936, and the east side was vacant, vegetated land (Figure 4). The road connected the current West Marginal Way and SW Michigan Street. At that time, an embayment of the Duwamish River was located approximately 175 feet east of the Project Property (Figure 4). By 1953, the Project Property's eastern portion was occupied by a parking lot. In the late 1950s, the roadways in the area were rerouted and, by 1956, the roadway previously on the Project Property had been abandoned, and the entire Project Property was being used as a parking lot. During this same period, the Duwamish River embayment was filled, so the main channel of the river was realigned to be located approximately 350 feet east of the Project Property, which is where it remains today. Since 1969, the Project Property has been used periodically as a parking lot with periods of no use, as indicated by vacant land in aerial photographs (Aspect, 2018c). There is no indication or evidence the Project Property was ever developed with any structures. Historical aerial photographs depicting the Project Property between 1936 and 2015 are provided in Appendix A.

The Port of Seattle operates T115³ as a marine cargo-handling facility with cargo storage; warehouse and processing operations, which have included seafood receiving, processing, and shipping; petroleum storage and distribution; industrial fabrication, construction, and materials storage; and vessel maintenance and repair. The results of previous investigations completed on the main portion of the T115 Plant 1 Cleanup Site have indicated releases of hazardous substances, including petroleum hydrocarbons, volatile organic compounds, and metals to soil and/or groundwater (Ecology, 2020).

1.3 Potential Environmental Concerns Based on Property History

The potential environmental concerns on the Project Property consist of the following:

³ When used alone, "T115" refers to the operations of T115 and not a defined geographic area.

- The suspected use of dredged sediment from the Duwamish River as fill soil, and potential other fill soil from unknown sources, on the Project Property.
- The migration (via groundwater flow) of hazardous substances from the main portion of T115 Plant 1 Cleanup Site to groundwater on the Project Property.

1.4 Current and Future Site Use

The Project Property is currently a gravel parking lot used for commercial truck and trailer parking by American Best Trucking. The Project Property is fully fenced with a gate on the north side (off SW Michigan Street), and there are no buildings or other structures.

The future site use includes construction of a proposed CSO control facility, and it is not currently planned or anticipated that future site use will be anything other than uses that are consistent with the City of Seattle General Industrial 1 zoning. The CSO control facility will consist of an underground combined sewage storage tank and an aboveground maintenance building. The combined sewage storage tank proposed location is the center of the Project Property, extending to within approximately 50 to 75 feet from the Project Property boundaries. The aboveground maintenance building overlies the combined sewage storage tank at its center with a smaller footprint. Remaining areas overlying the combined sewage storage tank will be paved for parking use. Beyond the combined sewage storage tank extent, remaining areas of the Project Property will be covered with a combination of a paved driveway extending from the CSO control facility's north side to the north-adjointing right-of-way, and secure fencing around the perimeter of the property to control access to the CSO control facility.

The excavation for the combined sewage storage tank will extend to a depth of approximately 35 feet below ground surface (bgs), below the static groundwater table, and will require a shoring system and construction dewatering. The combined sewage storage tank will be capable of resisting hydrostatic, buoyant, and lateral earth pressures once installed, so the excavation support and dewatering systems will be temporary and needed only during construction (HDR and Aspect, 2022).

2 Field Investigations

Prior to the 2011 Environmental Conditions Report, there was no indication of any previous environmental assessment activities on the Project Property. Between 2017 and 2023, environmental and geotechnical investigations have been conducted at the Project Property in support of the CSO Control Project. Environmental investigations are the primary focus of this section, with a summary of pertinent information from the geotechnical investigations. For a detailed discussion of geotechnical investigations, refer to “Geotechnical Data Report, West Duwamish CSO Control Project” (Aspect, 2023). Table 2 summarizes the completed Project Property explorations, and indicates whether contaminants were detected in soil and groundwater. The exploration locations are depicted on Figure 5.

2.1 Previous Investigations

Early in the CSO Control Project, Aspect performed a Hazardous Materials Corridor Assessment (HMCA; Aspect, 2017) that included an initial evaluation of the environmental conditions at the Project Property to evaluate its suitability for the CSO Control Project. The evaluation consisted of a review of historical records, regulatory databases, and a windshield survey⁴ to identify potentially significant environmental conditions resulting from past or current land use, and the likelihood of the presence of contaminated media. The results of this assessment identified the main portion of T115 Plant 1 Cleanup Site as posing a potential environmental concern to the Project Property. No environmental concerns associated with historical and current uses of the Project Property were identified. However, additional investigation was recommended to evaluate the environmental conditions at the Project Property. This was based on the proximity of the Project Property to the main portion of T115 Plant 1 Cleanup Site, where releases of hazardous substances are documented, and because historical filling and grading in the vicinity included the use of dredged sediment from the LDW, as well as soil from unknown sources. Prior to the site characterization activities, no subsurface exploration activities are known to have occurred on the Project Property.

2.2 Site Characterization

Aspect performed the site characterization activities based on the conclusions of the HMCA. Environmental field investigations occurred in June 2017 and May 2022, and groundwater monitoring occurred between May 2022 and May 2023 to capture seasonal fluctuations. The specific site characterization objectives were to:

- Evaluate the nature and extent of fill soil.
- Identify and evaluate the potential presence of contaminants in soil and groundwater.

The June 2017 investigation consisted of advancing five direct-push borings (EB-1 through EB-5; Figure 5), to total depths of 30 to 35 feet bgs at locations across the Project Property, for the collection and laboratory analysis of soil and grab groundwater samples. An Aspect geologist observed and classified soil types in the borings according to the Unified Soil Classification System (USCS), and soil samples were field screened using a photoionization detector (PID) to measure for presence of volatile organic compound (VOC) vapors in soil. Field screening also included visual observation of soil for potential staining, odor, and water sheen testing (Aspect, 2018a). Grab groundwater samples were collected from temporary 5-foot-long well screens installed in each boring.

In 2017, 2018, and 2022, geotechnical and archeological explorations were completed at the Project Property. One geotechnical boring (MW-1) was advanced to a depth of 201 feet bgs using mud rotary drilling techniques. A monitoring well was constructed in the boring, with a screened interval set from

⁴ From the HMCA, “The windshield survey was performed from public rights-of-way and did not include accessing any properties for a detailed reconnaissance or interviews with site personnel.”

17 to 27 feet bgs, to provide data for evaluation of potential construction dewatering as part of the preliminary geotechnical engineering evaluation for the CSO Project. Twenty archeological borings (AB-1 through AB-20) were advanced to total depths of 20 to 25 feet bgs, with observations used by others to evaluate past cultural use of the Project Property. Soil samples were obtained from boring MW-1 for geotechnical testing (including moisture content and percentage of fines). Samples were not collected for chemical testing, and no samples were collected from the archeological borings. In 2018, four additional geotechnical explorations were completed on the Project Property to support geotechnical design for the CSO Project, and monitoring wells were constructed in two of the explorations for further evaluation of construction dewatering (borings B-4 and B-5 and wells MW-2 and MW-3; Figure 5).

Although no soil or groundwater samples were collected for chemical analysis from the geotechnical or archeological borings, the subsurface conditions observed in those explorations are used in the CSM development (Section 4).

The May 2022 supplemental investigation consisted of the installation and development of five groundwater monitoring wells (MW-4 through MW-8; Figure 5) to total depths of 12.5 to 15 feet bgs at locations across the Project Property, for the collection and laboratory analysis of soil and groundwater samples and the evaluation of groundwater quality. The monitoring wells were constructed with screened intervals constructed entirely within the dredge fill soil to evaluate potential leaching of contaminants from the dredge fill to groundwater. An Aspect geologist observed and classified soil types in the borings according to the USCS, and soil samples were field screened using a PID to measure for presence of VOC vapors in soil. Field screening of soil collected from the borings also included visual observation for potential staining, odor, and water sheen testing (Aspect, 2018a).

Starting in May 2022, groundwater samples were collected quarterly from monitoring wells MW-1 through MW-8 to evaluate groundwater conditions, including both elevations/flow direction and chemical quality, seasonally. The monitoring wells include five that are constructed entirely within the dredge fill soil (MW-4 through MW-8; herein referred to as shallow wells) and two that are constructed entirely within the underlying native soil (MW-1 and MW-2; herein referred to as deep wells (Table 3). Well MW-3 is partially screened within the dredge fill soil and partially screened within the native soil (Table 3). Groundwater monitoring was also conducted at wells MW-1 through MW-8 in August 2022, November 2022, and February 2023.

Based on informal and preliminary comments from Ecology, three additional deep wells were installed to sample groundwater from beneath the dredge fill in the native soil. Groundwater samples were collected from monitoring wells MW-9 through MW-11⁵ in December 2022, as part of the February 2023 event indicated above, and in May 2023. During the May 2023 sampling event, groundwater levels were measured at all Project Property monitoring wells, including the shallow wells and the deep wells.

Monitoring well logs and boring logs for the environmental, geotechnical, and archeological borings are attached in Appendix B. The investigation locations are depicted on Figure 5. Table 3 summarizes well construction data and water level measurements.

2.2.1 Preliminary Contaminants of Potential Concern

The preliminary contaminants of potential concern (COPCs) for the site characterization included those constituents known to be present in LDW dredge spoils, which are suspected to have been used as fill soil at the Project Property, and contaminants documented and/or suspected to be associated with potential releases on the main portion of T115 Plant 1 Cleanup Site, as identified in the T115 Source Control Action Plan (Ecology, 2011a). The preliminary COPCs for the site characterization included:

- Total petroleum hydrocarbons (TPH) in the gasoline, diesel, and oil ranges
- Benzene, toluene, ethylbenzene, and xylenes (BTEX)

⁵ Aspect installed MW-9 through MW-11 in August 2022 as part of geotechnical investigations to support CSO Project design.

- Polycyclic aromatic hydrocarbons (PAHs)
- Priority Pollutant Metals (antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc), total and dissolved in groundwater
- Polychlorinated biphenyls (PCBs)
- Pentachlorophenol
- VOCs
- Semivolatile organic compounds (SVOCs)

Select soil samples collected as part of the June 2017 investigation from above the water table (vadose zone) in each boring were submitted for laboratory analysis of the preliminary COPCs. During the May 2022 investigation, soil samples were collected and analyzed from above the water table (vadose zone), at the base of the dredge fill, and at the top of the native soil from each boring and submitted for laboratory analysis of the preliminary COPCs. Grab groundwater samples from the June 2017 soil borings were analyzed for TPH, BTEX, and total metals. Groundwater samples from permanent and developed monitoring wells were analyzed for all the preliminary COPCs. While grab groundwater data were collected early in site characterization work, it was primarily used to inform later phases of investigation and is not included in the evaluation of the nature and extent of contamination at the Project Property. Groundwater data collected using low-flow sampling procedures from permanent and developed monitoring wells are considered representative of conditions within the water-bearing zone at the Project Property (see Section 2.3.3). The laboratory analytical data reports for soil and groundwater samples are included in Appendix C.

2.2.2 Soil and Groundwater Conditions

A detailed discussion of the geologic setting and geologic conditions observed during explorations completed for the site characterization is provided in Section 4.1 of the CSM. Generally, fill soil is up to 13 feet thick on the Project Property and is underlain by native, alluvial sediments. Each of the explorations completed at the Project Property encountered the fill soil, with characteristics typical of dredge spoils, overlying native Holocene alluvial floodplain and channel deposits. Two deep geotechnical explorations, MW-1 and MW-2 encountered marine sediments and glaciolacustrine deposits at depths of approximately 130 feet bgs to the total depth explored of 201 feet bgs (Figures 6 and 7).

The results of field screening during the site characterization did not identify staining, sheen, odors, or elevated concentrations of VOC vapors in soil, as measured with the PID (Appendix B).

Groundwater was observed in boreholes at the time of drilling at depths ranging from 7.5 to 21.5 feet bgs, but was typically encountered between 10 and 15 feet bgs (Appendix B). Static water level measurements in monitoring wells at the Project Property have been measured to range from 9 to 14 feet bgs, corresponding to elevations of 99 to 104 feet, relative to the King County Metro datum (NGVD29+100 feet).

Static groundwater levels measured in well MW-1 (screened in native deposits) using a datalogger between June 30 and July 21, 2017, varied between 11 and 14 feet bgs (Aspect, 2019). These data also show that groundwater levels fluctuate up to 3 feet daily in response to tidal cycles (Figure 8; Aspect, 2018b; Aspect, 2019). A comparison of tidal heights to groundwater elevations at well MW-1 during this data collection period indicates a time lag between high tide and groundwater levels at the Property of approximately 1.5 to 2.5 hours (Figure 8).

The wellheads were surveyed to allow for calculation of groundwater elevations and evaluation of groundwater flow direction on the Project Property. The survey data, water level measurements collected prior to each groundwater sampling event, and calculated groundwater elevations are provided on Table 3. Figure 9 depicts 2022-2023 groundwater elevations in the Project Property monitoring wells and shows that groundwater elevations in the shallow wells (MW-4 through MW-8) are generally 2 to 5 feet higher than groundwater elevations in the deeper wells (MW-1, MW-2, and MW-9 through MW-11). Based on groundwater measurements taken from the shallow wells in August 2022, groundwater flow direction in the dredge fill is interpreted as east-northeast toward the LDW (Figure 10). Further, the groundwater flow

direction at the Foss Environmental & Infrastructure site, located northwest of the Project Property, is similarly to the northeast toward the LDW (RPS GaiaTech, 2014). However, groundwater measurements taken from the shallow wells in December 2022, February 2023, and May 2023 indicate a groundwater flow direction in the dredge fill to the west (Figures 11 through 13), as discussed in Section 4.1.

Slug tests were conducted to estimate the hydraulic conductivity of soils within the screened zone of each monitoring well to support construction design for the CSO Project. The slug tests included both falling head and rising head tests using slug rods of different lengths (Aspect, 2018b). The geometric mean hydraulic conductivities range from 1.0 to 40.1 feet per day and are lowest where screens are constructed in the fill and alluvial floodplain deposits, which are generally finer grained, and higher where screens are constructed in the alluvial channel deposits, which are generally coarser grained (Table 3).

2.3 Sampling/Analytical Results

This section provides a description of the analytical results for soil and groundwater samples collected during the site characterization for the RI. The results are evaluated through a two-step process, as follows:

1. Initially, the soil and groundwater analytical results for all the preliminary COPCs are compared to the lowest of potentially applicable LDW screening levels to identify COPCs for the Project Property. Section 2.3.1 describes the preliminary cleanup levels (PCULs) used for this initial data screening. Sections 2.3.2. and 2.3.3 discuss soil and groundwater data, respectively, and identify the COPCs for the Project Property by media.
2. The second step is to develop site-specific screening levels based on a site-specific transport and exposure pathway analysis. This analysis is provided in Section 3.2 and the resulting site-specific screening levels are described in Section 3.3. The CSM (Section 4) describes the nature and extent of contamination at the Project Property considering the COCs identified for the Project Property through the initial data screening and the site-specific screening levels identified based on the site-specific transport and exposure pathway analysis.

2.3.1 Preliminary Cleanup Level Screening

Ecology's *Lower Duwamish Waterway PCUL Workbook and Supplemental Information* and the PCUL Workbook (Ecology, 2023a), together referred to as the PCUL Document, summarize environmental transport and exposure pathways that are potentially applicable to sites on and adjacent to the LDW, which applies to the Project Property. The PCULs cover transport pathways to surface water as well as additional pathways not related to surface water to support complete MTCA cleanup actions (Ecology, 2023a). The PCULs are intended for use in the initial screening of environmental chemical concentrations to identify chemicals and transport pathways of potential concern during the RI. The comparison of site contaminant concentrations to PCULs can be used to identify COPCs (Ecology, 2023a). The soil and groundwater data collected at the Project Property were screened against the lowest of the potentially applicable LDW PCULs on Tables D-1 and D-2, respectively, to identify COPCs for further evaluation (Appendix D). These COPCs are further assessed in Section 4 to determine contaminants of concern (COCs) for the Project Property.

The results of the site characterization indicate that none of the preliminary COPCs were detected in soil or groundwater samples at concentrations exceeding the lowest of the potentially applicable LDW PCULs with the exceptions presented below. Appendix D provides data tables of all preliminary COPCs compared to the lowest of the potentially applicable LDW PCULs.

2.3.2 Soil Data

The COPCs identified based on detected concentrations in soil samples above the lowest of the potentially applicable LDW PCULs are:

- Arsenic, chromium, copper, nickel, selenium, silver, thallium, and zinc in one or more of the soil samples from each of borings EB-4 and MW-4 through MW-8, including both dredge fill and native soil.

- Carcinogenic polycyclic aromatic hydrocarbons (cPAHs), consisting of benzo(a)pyrene and/or the total cPAH benzo(a)pyrene toxic equivalent concentration (total cPAH TEQ), in all but one of the soil samples collected from borings MW-4 through MW-8, in both fill and native soil and in a single fill soil sample collected from boring EB-3. All reported concentrations of cPAHs are J-flagged, indicating that the laboratory cannot reliably quantify the concentrations because they are so low.

PAHs are ubiquitous in urban environments. An area-wide background study of PAHs in surface soil, conducted by Ecology in the Seattle area, indicate a median total cPAH TEQ concentration of 0.084 milligrams per kilogram (mg/kg) and a nonparametric 90th percentile concentration of 0.390 mg/kg (Ecology, 2011a). For comparison, the median total cPAH TEQ soil concentration for samples collected from borings MW-4 through MW-8 is 0.0006 mg/kg, significantly lower than the Seattle urban background median concentration.

In addition, EPA established a sediment natural background concentration for total cPAH TEQ of 0.009 mg/kg in the LDW ROD (EPA, 2014). The natural background concentration of total cPAH TEQ was calculated using summary statistics on data from a 2008 study of sediment contaminant concentrations in non-urban areas of Puget Sound, away from populated and industrial areas and known contaminated sites (EPA, 2014). Ecology also calculated natural background of 0.0021 mg/kg cPAH TEQ for this same dataset using a different statistical metric (Ecology, 2021). The median total cPAH TEQ concentration of the LDW natural background dataset is 0.0045 mg/kg, which is higher than the median total cPAH TEQ soil concentration of 0.0006 mg/kg for the Project Property.

- PCBs in four of the dredge fill soil samples collected from borings MW-4, MW-6, and MW-7. PCBs were not detected above laboratory practical quantitation limits in any of the native soil samples collected from the Project Property.
- Gasoline-range TPH, oil-range TPH, benzene, 1-methylnaphthalene, fluoranthene, naphthalene, benzoic acid, bis(2-ethylhexyl) phthalate, and diethyl phthalate in one or more soil samples.

2.3.3 Groundwater Data

Concentrations of total metals—arsenic, chromium, copper, lead, nickel, and zinc—were detected in one or more of the grab groundwater samples collected from borings EB-1 through EB-5. However, the groundwater samples were grab samples collected from temporary soil borings and not from constructed and developed monitoring wells. The metals data were determined to be likely biased because of elevated turbidity that is inherent in grab samples and concentrations may be higher in the grab samples than they would be in groundwater samples collected from monitoring wells. The grab groundwater data were used to plan and scope subsequent investigation work, which included the installation and sampling of groundwater monitoring wells. The grab groundwater sample data are not considered to be representative of groundwater quality, and are not discussed further herein.

Groundwater data have been collected from 11 monitoring wells on the Project Property. Five monitoring wells on the Project Property are screened entirely within the dredge fill soil (MW-4 through MW-8; Figure 5). Five monitoring wells on the Project Property are screened entirely within the deeper, native soil (MW-1, MW-2, MW-9, MW-10, and MW-11; Figure 5). Well MW-3 is screened partially within the dredge fill soil and partially within the deeper, native soil.

Shallow/Dredge Fill Groundwater Quality

The COPCs identified based on detected concentrations in groundwater samples from shallow monitoring wells (MW-4 through MW-8) above the lowest of the potentially applicable LDW PCULs are:

- Total copper in the groundwater sample collected in November 2022 from well MW-7 at a concentration of 3.32 micrograms per liter ($\mu\text{g/L}$), which only slightly exceeds the 3.1 $\mu\text{g/L}$ PCUL. The reported dissolved copper concentration from the same sample is below the PCUL. Concentrations of both total and dissolved copper in groundwater collected from well MW-7 were below the PCUL in both previous and subsequent sampling events in May and August 2022, and February 2023.

- Hexachlorobenzene in a single groundwater sample collected from well MW-5 in May 2022. Subsequent groundwater data, collected in August and November 2022 and February 2023, did not report detectable concentrations of hexachlorobenzene in well MW-5.
- Individual cPAH compounds and total cPAH TEQ in the groundwater samples collected from all the shallow wells, except MW-7, during one or more sampling events. However, the concentrations of the individual cPAHs were J-flagged by the laboratory, indicating that they are estimates below the practical quantitation limit that cannot be reliably quantified.

Deeper/Native Soil Groundwater Quality

The COPCs identified based on detected concentrations in groundwater samples from deeper monitoring wells (MW-1, MW-2, and MW-9 through MW-11) above the lowest of the potentially applicable LDW PCULs are:

- Total mercury in the groundwater sample collected from well MW-2 in May 2022 at a concentration of 0.026 µg/L, which only slightly exceeds the PCUL of 0.025 µg/L. Total mercury was below the PCUL in subsequent groundwater samples collected in August and November 2022 and February 2023. Dissolved mercury has not been detected in any of the groundwater samples collected from well MW-2. The total mercury result is an estimated concentration below the practical quantitation limit that cannot be reliably quantified.
- Individual cPAH compounds and total cPAH TEQ in the groundwater samples collected from all the deep wells during one or more sampling events. However, the reported concentrations of the individual cPAHs were J-flagged by the laboratory, indicating that they are estimates below the practical quantitation limit that cannot be reliably quantified.
- Bis(2-ethylhexyl) phthalate in the groundwater samples collected from well MW-1 in November 2022, and from wells MW-10 and MW-11 in February 2023. The reported concentrations are J-flagged by the laboratory, indicating that they are estimates below the practical quantitation limit that cannot be reliably quantified.

As noted in Section 2.2, MW-3 is screened partially within the dredge fill soil and partially within the deeper, native soil. The COPCs identified based on detected concentrations in the groundwater samples collected from well MW-3 above the lowest of the potentially applicable LDW PCULs are individual cPAHs and total cPAH TEQ, bis(2-ethylhexyl) phthalate, and pentachlorophenol.⁶ However, the reported concentrations of these compounds were J-flagged by the laboratory, indicating that they are estimates below the practical quantitation limit that cannot be reliably quantified.

2.3.4 Quality Assurance, Quality Control, and Data Validation

Aspect performed a modified Level 2A data validation (also referred to as Aspect's standard Data Quality Review [DQR]) of all analytical data for the RI. Aspect's standard DQR was developed based on EPA Stage 2A data validation, with minor modifications designed to meet Aspect's internal data quality and management program goals and the project objectives. Laboratory quality assurance and quality control (QA/QC) sample results (including a combination of laboratory method blanks, blank spike and spike duplicate, matrix spike and spike duplicate, surrogate, and lab duplicate recoveries), laboratory-applied flags, and laboratory-provided analysis comments are reviewed. Based on this review, qualifier flags are assigned to the data where appropriate, which indicate data usability for study goals and objectives. Data qualifiers assigned to RI analytical data results for this study include:

Data assigned a J or UJ qualifier may be used for site evaluation purposes but the reasons for qualification should be considered when interpreting sample concentrations.

⁶ Well MW-3 could not be located for sampling during the February or May 2023 sampling events because it is suspected to have been located beneath a trucking container being stored on the Project Property.

- J qualifiers indicate the result is estimated. This includes results reported as detections below the practical quantitation limit.
- UJ qualifiers indicate the result was not detected at or above detection limits and is estimated.

Data assigned a C (contamination) qualifier should be reviewed in the context of the site conditions to assess usability of the data to meet the study objectives.

- C qualifiers indicate the result may be influenced by unconfirmed contamination as part of the analytical process

Data assigned an R (rejected) qualifier should not be used or presumed representative of the sample. Three results were rejected:

- 2-Chloroethyl Vinyl Ether in sample MW-11-053123 was rejected due to matrix effects indicated by no recovery of the analyte in the matrix spike and matrix spike duplicate samples.
- 3,3'-Dichlorobenzidine in sample MW-8-022323 was rejected due to matrix effects indicated by no recovery of the analyte in the matrix spike and matrix spike duplicate samples.
- 4-Chloroaniline in sample MW-8-022323 was rejected due to low recovery of the analyte in the laboratory control sample, laboratory control sample duplicate, and surrogate; matrix effects indicated by low recovery of the analyte in the matrix spike and matrix spike duplicate samples; and poor precision of duplicate samples.

Based on review of the laboratory QA/QC results, the results of Aspect's DQR, and review of the data qualifiers, three results were rejected, and it is Aspect's opinion that the remaining data for this study are of known quality and are acceptable for use for project goals and objectives as qualified. Values without qualification meet all data measurement quality objectives and are suitable for use.

3 Remedial Investigation Screening Levels

This section summarizes the COPCs for the Project Property, evaluates the potential transport and exposure pathways and provides the site-specific screening levels to which the COPCs will be further assessed against.

3.1 Contaminants of Potential Concern

The contaminants that exceed the lowest of the potentially applicable LDW PCULs in soil and groundwater are retained as COPCs for further evaluation in the remedial investigation, as follows:

- In soil:
 - PCBs, as total PCB aroclors
 - Metals, specifically arsenic, chromium, copper, nickel, selenium, silver, thallium, and zinc
 - PAHs, specifically 1-methylnaphthalene, benzo(a)pyrene, fluoranthene, and naphthalene, and total cPAH TEQ
 - Other SVOCs, specifically benzoic acid, bis(2-ethylhexyl) phthalate, and diethyl phthalate
 - Benzene
 - Gasoline- and oil-range TPH
- In groundwater:
 - Metals, specifically copper and mercury
 - PAHs, specifically benz(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, indeno(1,2,3-cd)pyrene, and total cPAH TEQ
 - Other SVOCs, specifically bis(2-ethylhexyl) phthalate, hexachlorobenzene, and pentachlorophenol.

3.2 Transport and Exposure Pathway Evaluation

The potential transport and exposure pathways for the Project Property were evaluated for the COPCs in accordance with MTCA, the PCUL Document (Ecology, 2023), and the LDW Source Control Strategy (Ecology, 2016c), by media. Transport and exposure pathways and receptors discussed in this section are evaluated for the current use of the Project Property as a gravel parking lot, and anticipated changes associated with the planned future use of the Project Property, following construction of the proposed CSO control facility.

3.2.1 Soil Direct Contact

This potential exposure pathway consists of direct contact by an employee or construction worker to COPCs in soil with exposure by incidental ingestion, inhalation, or dermal absorption. This is a potentially complete exposure pathway on the Project Property under both the current use and future use as a CSO control facility, due to the presence of COPCs in soil within 15 feet of ground surface (the standard point of compliance for soil per WAC 173-340-740). Although the current and future land use are commercial/industrial, unrestricted soil cleanup levels are used to evaluate soil data collected as part of the RI. Based on this exposure pathway and receptor, individual soil PCUL SL-1, Direct Contact Unrestricted (Ecology, 2023a) is applicable.

3.2.2 Soil (Vadose and Saturated Zones) Leaching to Groundwater

MTCA requires derivation of soil concentrations that will not cause contamination of groundwater at levels that result in an exceedance of the applicable groundwater cleanup levels (WAC 173-340-747). One

method to meet this requirement is through an empirical demonstration (WAC 173-340-747(f)), which compares site-specific soil data to site-specific groundwater data to empirically demonstrate that soil concentrations measured at a site have not caused—and will not cause—the applicable groundwater cleanup level to be exceeded. MTCA states that the measured groundwater concentrations must be less than or equal to the applicable groundwater cleanup levels and the measured soil concentrations will not cause an exceedance of the applicable groundwater cleanup levels at any time in the future. This demonstration must show that enough time has elapsed for contaminants to migrate from soil to groundwater and that the characteristics of the site are representative of future site conditions. Ecology's PCUL supplementation information (2023a) indicates "...groundwater concentrations in compliance with the groundwater PCUL for a specific chemical could support a proposal to eliminate the leaching pathway from the soil PCUL for that chemical." The site-specific soil and groundwater data that have been collected as part of the site characterization at the Project Property, as described herein, demonstrates empirically that the soil leaching to groundwater pathway is incomplete.

There are no known or suspected contaminant sources associated with historical use or operations on the Project Property except for the historical placement of dredge fill from the Duwamish River. The dredge fill was placed on the Project Property in the 1910s and 1920s, so any potential leaching of contaminants in the fill to groundwater has been occurring for more than 100 years. The data collected from the fill soil on the Project Property indicate the soil contains sporadic and very low-level concentrations of COPCs, including metals, cPAHs, and PCBs. The Project Property was never paved so the soil is exposed to infiltration, and the depth to groundwater is no more than 14 feet, so contaminants leached from soil by infiltration do not have far to travel to reach groundwater. Given the source of contaminants (dredge fill soil), the type of industrial development at time the fill was placed, the time since the source was placed on the Project Property (more than 100 years), and the type and concentration of COPCs present, sufficient time has elapsed for contaminants to migrate from soil to groundwater and the groundwater conditions at the Project Property are representative of future site conditions.

With two exceptions, the COPCs detected above the PCULs in soil have not been detected in groundwater above the PCULs, and the COPCs detected in groundwater above the PCULs have not been detected in soil above the PCULs⁷. Copper and benzo(a)pyrene have been detected in both soil and groundwater at concentrations exceeding the PCULs; however, the empirical data demonstrate an incomplete leaching pathway for these compounds, as follows:

- Total copper was detected in the groundwater sample collected from well MW-7 in November 2022 at a concentration of 3.32 µg/L, which only slightly exceeds the 3.1 µg/L PCUL. Previous and subsequent groundwater results for total copper and all results for dissolved copper from well MW-7 are below the PCUL, suggesting the single total copper exceedance may be due to sample turbidity. Well MW-7 is constructed within the dredge fill with a screen from approximately 6.5 to 11.5 feet bgs. Soil samples of dredge fill collected from the MW-7 borehole, at depths just above and within the well screened interval, contain copper at concentrations below the soil PCUL, which is based on natural background, indicating that leaching of copper from dredge fill is not a source of copper to groundwater.
- Benzo(a)pyrene has been detected above the PCULs in many of the fill and native soil samples collected as part of the site characterization. All the reported concentrations of benzo(a)pyrene in Project Property soil are J-flagged, indicating that they are too low to be accurately quantified by the laboratory. Despite this, only a single concentration of benzo(a)pyrene has been reported in groundwater (at well MW-2 during the November 2022 sampling event), indicating benzo(a)pyrene is not leaching to groundwater at the Project Property at levels that are causing exceedances of the groundwater PCULs.

⁷ Bis(2-ethylhexyl) phthalate was detected in Project Property soil and groundwater at concentrations above the PCULs but below the laboratory practical quantitation limits. As discussed in Section 4.2, when a hazardous substance is detected below the practical quantitation limit and the practical quantitation limit is higher than the cleanup level, the cleanup level shall be considered to have been attained and, for this reason, bis(2-ethylhexyl) phthalate can be ruled out as a COC and is not discussed in this empirical demonstration.

The site characterization data demonstrate empirically that contaminants in soil are not leaching to groundwater at levels that result in an exceedance of the applicable groundwater PCULs.

Based on this empirical demonstration, the following individual soil leaching PCULs (Ecology; 2023a) are not applicable:

- SL-2: Vadose zone protection of drinking water
- SL-3: Vadose zone protection of surface water via ground water
- SL-4: Vadose zone protection of sediment via ground water
- SL-5: Saturated zone protection of drinking water
- SL-6: Saturated zone protection of surface water via ground water
- SL-7: Saturated zone protection of sediment via ground water

3.2.3 Protection of Sediment via Soil Erosion

The protection of sediment via soil erosion (individual PCUL SL-8; Ecology, 2023a) is not a complete or applicable contaminant migration pathway for the Project Property. The Project Property has always been unpaved with no built structures. Precipitation infiltrates into the ground surface, and there are no stormwater management facilities (drains, catch basins, etc.) on the Project Property. Although there is no stormwater collection system on the Project Property, it is unlikely that contaminants in shallow fill soil are transported in surface water runoff (sheet flow) to the LDW because of the distance of the Project Property from the LDW and the unpaved (pervious) surface between the Project Property and the LDW; that pervious condition facilitates infiltration and thus limits overland flow and sediment transport. The Project Property is located more than 350 feet from the LDW, so there is no direct pathway for soil to erode to sediment, as may potentially occur for waterfront properties where upland soil can be directly eroded from banks by wind, waves, and precipitation and deposited as sediment. For these reasons, protection of sediment via soil erosion (individual PCUL SL-8; Ecology, 2023a) is not applicable.

3.2.4 Protection of Terrestrial Ecological Receptors

The Project Property does not qualify for an exclusion from the terrestrial ecological evaluation (TEE) because there are no barriers to soil exposure; there are approximately 2 acres of contiguous undeveloped land to the south and within 500 feet of the Project Property, and concentrations of hazardous substances in soil exceed natural background levels (WAC 173-340-7491). However, the Project Property does not meet any of the criteria for a site-specific TEE (natural areas, vulnerable species, extensive habitat, or risk to significant wildlife population [WAC 173-340-7492]), so a simplified TEE is appropriate to meet MTCA requirements.

A simplified TEE exposure analysis is summarized in Table 6 and assumes ongoing use of the Project Property as a commercial/industrial facility either in its current use as a commercial truck and trailer parking lot or its potential future use as a CSO control facility.

A simplified TEE is intended to identify sites that are not likely to pose a significant threat to ecological receptors, as determined by evaluating three criteria: exposure analysis, pathways analysis, and toxicity analysis. The TEE process can be ended if any one of the three criteria have been met. The Project Property meets two of the three criteria, as follows:

- Exposure analysis: Land use at the Project Property and surrounding area makes substantial wildlife exposure unlikely (Table 6).
- Toxicity analysis: The hazardous substances present at the Project Property do not exceed the chemical concentrations in MTCA Table 749-2 for industrial or commercial sites.

Based on these results, the Project Property does not pose a significant risk to the environment and the TEE process can be ended (WAC 173-340-7492). Additionally, the LDW site-specific TEE values (SL-9) are not applicable, but the simplified TEE unrestricted land use values (MTCA Table 749-2) are applicable.

3.2.5 Groundwater Protection of Drinking Water

Although it is unlikely that groundwater on the Project Property is potable, protection of drinking water (GW-1) is a potentially complete contaminant migration pathway to human receptors through ingestion because nonpotability has not been determined, and COPCs are present in groundwater at concentrations exceeding the lowest of the potentially applicable LDW PCULs. Based on this potential exposure pathway, individual groundwater PCUL GW-1, Protection of Drinking Water (Ecology, 2023a) is applicable.

3.2.6 Groundwater Protection of Surface Water and Sediment

The Project Property is located within the LDW drainage basin and near the surface water of the Duwamish River; therefore, groundwater at or near the Project Property may discharge to surface water and sediment in the LDW. Based on the Project Property location relative to the LDW, individual groundwater PCULs GW-2 and GW-3 for the protection of surface water and sediment (Ecology, 2023a) are applicable.

3.2.7 Soil and Groundwater Protection of Indoor Air

Inhalation of vapors containing volatile contaminants sourced from contaminated soil is not a complete pathway, due to the lack of volatile contamination in soil at the Project Property. Inhalation of vapors containing volatile contaminants sourced from contaminated groundwater is unlikely to be a complete pathway, because the only volatile contaminants detected in groundwater above the lowest of the potentially applicable groundwater PCULs (including protection of indoor air) to date—mercury and hexachlorobenzene—have each only been detected on a single occasion and were not detected in the most recent sampling event. Based on the lack of volatile contaminants in soil and groundwater, groundwater PCUL GW-4 for the protection of indoor air (Ecology, 2023a) is not applicable.

3.3 Site-Specific Screening Levels

The preliminary COPCs, as discussed in Section 2.2.1, are those constituents known to be present in LDW dredge spoils, which are suspected to have been used as fill soil at the Project Property, and contaminants documented and/or suspected to be associated with potential releases on the main portion of T115 Plant 1 Cleanup site. As discussed in Section 2.3.1, the soil and groundwater data for the preliminary COPCs were screened against the lowest of the potentially applicable LDW PCULs, assuming potable groundwater. The results of this initial screening were used to identify contaminants by media as COPCs for further evaluation, as described in Section 3.1. This process is consistent with the PCUL Document (Ecology, 2023a).

Ecology's development of PCULs provides a starting point for establishing site-specific screening levels (Ecology, 2023a). Site-specific screening levels are used to support the development and evaluation of remedial alternatives to address LDW upland source control and MTCA requirements, if required.

Site-specific screening levels were developed for the COPCs based on the known and likely complete exposure pathways (Section 3.2), in accordance with MTCA and Ecology's Memorandum *Groundwater Cleanup Levels for Upland Sites Along the Lower Duwamish Waterway* (Ecology, 2016a). The site-specific screening levels are provided on Tables 4 and 5 and summarized below.

- **Soil.** The site-specific screening levels for soil are the most stringent soil PCUL associated with the following complete exposure pathways for the site: direct contact (unrestricted land use; SL-1) and simplified terrestrial ecological exposure (unrestricted land use; MTCA Table 749-2), adjusted upward to natural background, where appropriate (SL-10).

There are no established soil values for oil-range TPH in MTCA Table 749-2. Instead, the total diesel- and oil-range (extended) TPH value from MTCA Table 749-2 is used to evaluate risk to ecological receptors (Table 4).

- **Groundwater.** The site-specific screening levels for groundwater are the most stringent groundwater PCUL for potable water, which includes consideration of the following complete exposure pathways for the site: protection of drinking water (GW-1), protection of surface water (GW-2), and protection of sediment (GW-3), adjusted upward to natural background, where appropriate (GW-5).

The site-specific screening levels are used to evaluate the COPCs in Section 4.2 to identify the COCs for the Project Property.

4 Conceptual Site Model

This section presents the CSM that was developed based on the results of the site characterization and is the basis for determining whether remedial actions are necessary. The CSM has been developed based on the requirements of MTCA, the LDW Source Control Strategy (Ecology, 2016c), and the PCUL Document to evaluate direct exposure pathways and receptors and recontamination potential for the LDW.

4.1 Geology and Groundwater

The Project Property is in the Duwamish River Valley, a subglacially incised valley bordered by glaciated hills that form the valley walls and uplands. The deepest and oldest deposits encountered during subsurface exploration at the Project Property are stiff to hard clay and silt that was deposited in a glacial lake or bay prior to the Fraser glaciation, the most recent glaciation of the area. These deposits were subsequently overridden and consolidated by glaciation. Younger geologic units that filled in the deep glacially incised Duwamish River Valley consist of layered sequences of late Pleistocene or Fraser Stage glaciolacustrine or glaciomarine silts and clays, and latest Pleistocene to Holocene (postglacial) marine tide flat and estuary deposits overlain by river mouth delta and channel deposits, and floodplain deposits.

Troost et al, (2005), indicates the Project Property is underlain by alluvium (Qal). Regionally, the alluvium unit is up to hundreds of feet thick and is described as predominantly sandy with horizontal fine- and coarse-grained lenses, including estuary peat and clay, deposited within the Duwamish River Valley. Based on our explorations, these alluvial soils generally consist of very loose to medium dense sand with varying amounts of silt, and very soft to stiff silt.

In subsurface explorations at the Project Property, fill soil was observed from ground surface up to depths of approximately 13 feet bgs. The fill consists of a medium stiff, low plasticity silt with varying amounts of sand and very loose to loose sand with varying amounts of silt. The fill soil is consistent with, and interpreted to be, dredged sediments from the Duwamish River that were used as upland fill in the early 1900s.

Underlying the fill soil, floodplain deposits are interbedded with channel deposits. The floodplain deposits generally consist of very soft to very stiff, nonplastic to low-plasticity silt with varying amounts of sand, silty fine sand, and very soft to soft organic silt and are up to 70 feet thick. The channel deposits consist of medium dense, medium-grained sand with varying amounts of silt and are up to 30 feet thick. Marine deposits were observed underlying the floodplain and channel deposits, at a depth of 130 feet bgs, and consist of very soft to stiff, low plasticity silt with seashell fragments. Glaciolacustrine deposits consist of stiff to hard, low-plasticity clay, and were observed beneath the marine deposits at depths of 160 to 165 feet bgs, to the maximum depth explored at the Project Property of 201 feet bgs. Figures 7 and 8 are geologic cross sections showing the subsurface conditions observed at the Project Property.

Groundwater was encountered near the contact between the fill soil and the native alluvial floodplain deposits, at depths of approximately 11 to 14 feet bgs. Based on the results of the site characterization, groundwater flow directions reverse over time, with flow observed to the east, towards the Duwamish River, and to the west, away from the Duwamish River (Figures 10 through 13). Tidal influences on groundwater have been observed in deeper (native) well MW-1, which is the only location on the Project Property where detailed water level measurements have been collected. Tidal influences are one likely cause of groundwater flow direction reversals.

4.2 Source, Nature, and Extent

There are no known or suspected sources of contamination associated with historical use or operations on the Project Property except for the historical placement of dredge fill from the Duwamish River. The site characterization did not identify contaminants in Project Property media at concentrations and

locations that suggest potential sources at or to the Project Property. The source, nature, and extent of COPCs in soil and groundwater at the Project Property are described below.

4.2.1 Soil

Arsenic, chromium, and selenium, which are naturally occurring metals, are the only COPCs in soil at the Project Property that were detected at concentrations exceeding the site-specific screening levels and are, therefore, carried forward as soil COCs for further evaluation. The nature and extent of the COCs in soil is as follows:

- Arsenic was detected in two site characterization soil samples at concentrations exceeding the site-specific 7.3 mg/kg screening level, which is based on Ecology's Natural Background Soil Metals Concentrations in Washington State (Ecology, 1994). The exceedances of arsenic are reported in two of five native soil samples collected at depths of 10 and 12.5 feet bgs with concentrations of 11.5 mg/kg and 12.6 mg/kg (Table 4). No fill samples had arsenic concentrations above the site-specific screening level of 7.3 mg/kg.
- Chromium was detected in three site characterization soil samples at concentrations exceeding the site-specific 48 mg/kg screening level, which is based on Ecology's Natural Background Soil Metals Concentrations in Washington State (Ecology, 1994). The exceedances of chromium are reported in 3 of 15 fill soil samples collected between depths of 3 and 12 feet bgs; these three samples range in concentration from 52.2 mg/kg to 63 mg/kg (Table 4).
- Selenium was detected in eight of 20 site characterization soil samples exceeding the site-specific 0.80 mg/kg screening level, which is based on the protection of terrestrial ecological receptors. The exceedances of selenium are reported in both fill and native soil samples collected from depths between 3.5 and 14 feet bgs. The concentrations of selenium reported exceeding the site-specific screening level range from 0.89 mg/kg to 1.46 mg/kg (Table 4).

The site characterization data for arsenic and chromium are further evaluated using statistical methods in accordance with MTCA. The analysis was completed in accordance with WAC 173-340-740, which stipulates that the following three criteria must be met for a chemical to comply with MTCA cleanup levels (site-specific screening levels in this case):

1. The 95 percent upper confidence limit (UCL) on the mean concentration is less than the site-specific screening level, or natural background in this case.
2. No single concentration can be greater than two times the site-specific screening level.
3. Less than 10 percent of the sample concentrations can exceed the site-specific screening level, or if the site-specific screening level is based on natural background, a higher exceedance frequency can be calculated based on site-specific data and used instead (Ecology, 1992).

Because of the elevated arsenic practical quantitation limits for soil samples collected from 2017 borings EB-1 through EB-5, only the arsenic data collected in 2022 from borings MW-4 through MW-8 are used in the statistical analysis. For 15 soil samples, the frequency of exceedance can be 20 percent (assuming the site-specific screening level is at the 90th percentile and a 0.05-level false positive error rate). The arsenic data were evaluated using EPA's ProUCL 5.1 software, and no outliers were identified in the dataset for the 1 percent or 5 percent significance level using Dixon's Outlier test. Assuming a lognormal distribution, the 95 percent UCL is 7.28 mg/kg, which is below the site-specific screening level (although ProUCL suggests using the 95 percent UCL of 6.27 mg/kg based on a normal distribution). The results of the statistical analysis indicate that arsenic in Project Property soil complies with the site-specific screening level since the 95 percent UCL is less than the site-specific screening level, no single concentration is greater than two times the site-specific screening level, and less than 20 percent of the samples contain arsenic above the site-specific screening level. Therefore, arsenic is not a COC for soil. The backup data and information of the statistical analysis for arsenic in Project Property soil are provided in Appendix E.

All soil chromium results were used in the statistical analysis. For 20 soil samples, the frequency of exceedance can be 20 percent because the site-specific screening level is based on background. Again, the chromium data were evaluated using EPA's ProUCL 5.1 software and no outliers were identified in

the data set. The data do not fit a discernable distribution, but the 95 percent UCL is 33 mg/kg, assuming a lognormal distribution, and 37 mg/kg, assuming a nonparametric distribution – both of which are below the site-specific screening level of 48 mg/kg. The results of the statistical analysis indicate that chromium in Project Property soil complies with the site-specific screening level since the 95 percent UCL is less than the site-specific screening level, no single concentration is greater than two times the screening level, and less than 20 percent of the samples contain chromium at concentrations above the site-specific screening level. The backup data and information of the statistical analysis for chromium in Project Property soil are provided in Appendix E.

The detected concentrations of selenium in soil on the Project Property are all well below the concentration for the protection of human health through unrestricted direct contact of 400 mg/kg (Table 4). Selenium is a naturally occurring metal that has been detected in both fill and native soil on the Project Property. Selenium was detected in all the 16 soil samples in which it was analyzed at concentrations ranging from 0.41 mg/kg to 1.46 mg/kg. The range of concentrations of selenium is only 1 mg/kg (or 1 part per million) and is indicative of naturally occurring selenium as mineral content of the soil and not an anthropogenic source. The minimum, median, and maximum concentrations of selenium in the fill are lower than in the native soil and the most common sources of selenium contamination (fertilizer, coal combustion, and copper refining) did not occur at the Project Property. In addition, the concentrations of selenium detected in soil at the Project Property are similar to the range of concentrations of selenium reported for King County soils and stream sediment in the USGS National Geochemical Survey Database⁸ (0.1 mg/kg to 1.2 mg/kg). Because there are no known sources of selenium on the Project Property, selenium is naturally occurring and present at higher concentrations in the native soil than the fill soil, and within the range of concentrations reported in the vicinity of Parcel A, selenium is not a COC for soil.

4.2.2 Groundwater

Groundwater quality has been evaluated by installation of permanent groundwater monitoring wells—screened both in dredge fill and underlying native soil—that were sampled in May 2022, August 2022, November/December 2022, February 2023, and May 2023. The COPCs detected in groundwater at concentrations above the site-specific screening levels and carried forward as groundwater COCs for further evaluation are discussed below. With two exceptions (copper and hexachlorobenzene), all the exceedances of the groundwater site-specific screening levels are J-flagged concentrations of COPCs with extremely low LDW PCULs, where the laboratory practical quantitation limit is above the site-specific screening level, so any detection, even a J-flagged, estimated concentration with low reliability is conservatively identified as an exceedance.

- Total copper was detected exceeding the site-specific screening levels in a single sample, collected from a single monitoring well, during a single sampling event at a concentration only slightly above the site-specific screening level (Table 5). The concentration of dissolved copper in the same sample did not exceed the site-specific screening level. The single, low, non-reproducible concentration of total copper reported above the site-specific screening level is not considered representative of groundwater quality at the Project Property and, therefore, copper is not a COC for groundwater.
- Total mercury was detected exceeding the site-specific screening level in a single sample, collected from a single monitoring well, during a single sampling event at a concentration only 0.001 µg/L above the site-specific screening level (Table 5). The total mercury result is J-flagged, indicating the concentration is an estimate below the practical quantitation limit that cannot be reliably quantified. The concentration of dissolved mercury in the same sample did not exceed the site-specific screening level.
- Pentachlorophenol was detected above the site-specific screening level in a single sample, collected from a single monitoring well, during a single sampling event and has been below the

⁸ <https://mrdata.usgs.gov/geochem/county.php?place=f53033&el=Se&rf=northwestern>

site-specific screening level in all other samples collected from all other monitoring wells during all other sampling events (Table 5). The pentachlorophenol result is J-flagged, indicating the concentration is an estimate below the practical quantitation limit that cannot be reliably quantified.

- Bis(2-ethylhexyl) phthalate is a common field and laboratory contaminant that has been detected in 3 of 36 groundwater samples collected from the Project Property at concentrations at or just above the practical quantitation limit (Table 5). All the bis(2-ethylhexyl) phthalate results are J-flagged indicating that the concentrations are estimated below the practical quantitation limit and cannot be reliably quantified.
- Hexachlorobenzene was detected above the site-specific screening level in a single sample, collected from a single monitoring well, during a single sampling event (Table 5). Hexachlorobenzene was not detected in groundwater in any of the later events, and the detection is not considered representative of overall groundwater quality at the Project Property. Therefore, hexachlorobenzene is not a COC for groundwater at the Project Property.
- Individual cPAH compounds are detected sporadically in groundwater, with all results J-flagged indicating that they were not detected at concentrations above the practical quantitation limits, and they are too low to be reliably quantified (Table 5). As discussed in Section 2.3.2, PAHs are ubiquitous at low concentrations in urban environments.

A single detection of total copper and a single detection of hexachlorobenzene are the only occurrences of any of the COPCs in Project Property groundwater that have been detected above the laboratory practical quantitation limits and the site-specific screening levels. All other exceedances of the site-specific screening levels are attributable to estimated concentrations of COPCs reported below the laboratory practical quantitation limits. MTCA (WAC 173-340-720[7][c]) stipulates that cleanup levels shall not be set at concentrations below the practical quantitation limits and further indicates that, when a hazardous substance is detected below the practical quantitation limit and the practical quantitation limit is higher than the cleanup level, the cleanup level shall be considered to have been attained (WAC 173-340-707[2]). Therefore, there are no COCs for the Project Property in groundwater.

5 Remedial Investigation Conclusions

There are no known, documented, or suspected sources of contamination associated with historical use or operations on the Project Property except for the historical placement of dredge fill from the Duwamish River. Excavated riverbank material, dredge spoils from the river channel, and unknown fill are known to have been used for fill and grading in the vicinity of the Project Property in the 1910s and 1920s. The potential environmental concerns on the Project Property consist of the following:

- Suspected use of dredged sediment from the Duwamish River as fill soil, and potential other fill soil from unknown sources, on the Project Property.
- The migration (via groundwater flow) of hazardous substances from the main portion of the T115 Plant 1 Cleanup Site to groundwater on the Project Property.

In accordance with WAC 173-340, the objective of the RI is to characterize the nature and extent of potential contamination at the Project Property to meet the requirements of MTCA.

The RI included collection of soil and groundwater samples for laboratory analysis of the preliminary COPCs and comparison of analytical results to screening criteria to first identify COPCs and then COCs, as follows:

1. Preliminary COPCs: Those contaminants known to be present in LDW dredge soils and/or documented and/or suspected to be associated with releases on the main portion of the T115 Plant 1 Cleanup site. All RI samples collected from the Project Property were analyzed for the preliminary COPCs.
2. COPCs: Contaminants detected in soil or groundwater at concentrations exceeding the lowest of the potentially applicable LDW PCULs, which were developed by Ecology for use in the initial screening of environmental chemical data during an RI to identify COPCs. The COPCs were then carried through for further evaluation in consideration of site-specific transport and exposure pathways, in accordance with MTCA, the PCUL Document (Ecology, 2023a), and the LDW Source Control Strategy (Ecology 2016c), by media.
3. COCs: Contaminants detected in soil or groundwater at concentrations exceeding the site-specific screening levels, identified based on the site-specific evaluation of transport and exposure pathways. Site-specific screening levels were developed for screening of the COPCs based on these known or potentially complete transport and exposure pathways in accordance with MTCA and the PCUL Document.

The results of the RI are as follows:

- Fill soil was observed from ground surface to depths of approximately 13 feet bgs. The fill consists of a medium stiff, low plasticity silt with varying amounts of sand and very loose to loose sand with varying amounts of silt. The fill soil is consistent with, and interpreted to be, dredged sediments from the Duwamish River.
- Metals, cPAHs, gasoline- and oil-range TPH, benzene, individual SVOCs, and PCBs were detected in soil and/or groundwater at concentrations exceeding the lowest of the potentially applicable LDW PCULs identified for initial screening of the RI data (collectively, the COPCs).
- The potentially complete exposure pathways at the Project Property are:
 - Soil. Direct contact by an employee or construction worker to soil with exposure by incidental ingestion, inhalation, or dermal absorption (individual PCUL SL-1), and terrestrial ecological exposure (unrestricted land use).
 - Groundwater. Human direct contact through ingestion (individual PCUL GW-1, protection of drinking water), protection of surface water (GW-2) and protection of sediment (GW-3).

The PCULs associated with these exposure pathways are used as site-specific screening levels unless they are below natural background PCULs (SL-10 and GW-5). In these cases, the natural background is used as the site-specific screening level.

Based on the comparison of the site characterization soil and groundwater data for the COPCs to the site-specific screening levels, arsenic, chromium, and selenium in soil, and copper, mercury, pentachlorophenol, bis(2-ethylhexyl) phthalate, hexachlorobenzene, and cPAHs, in groundwater were identified for further assessment.

The results of a statistical analysis indicate that arsenic and chromium in Project Property soil comply with the site-specific screening level in accordance with MTCA. Selenium is present at concentrations indicative of naturally occurring selenium as mineral content of the soil and within the range of concentrations that occur in the vicinity of Parcel A based on results of local studies.

Copper and hexachlorobenzene have been detected in groundwater above the site-specific screening levels on a single occasion, and are not considered representative of groundwater quality at the Project Property. Mercury, pentachlorophenol, bis(2-ethylhexyl) phthalate, and cPAHs have been detected in groundwater above the site-specific screening levels but below the practical quantitation limits and are, therefore, in compliance with MTCA. Based on this data and information, there are no COCs for the Project Property.

The results of the RI indicate that there is no current or potential future risk to human health or the environment and thus, there are no COCs requiring cleanup.

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Limitations

Work for this project was performed for the King County (Client), and this report was prepared in accordance with generally accepted professional practices for the nature and conditions of work completed in the same or similar localities, at the time the work was performed. This report does not represent a legal opinion. No other warranty, expressed or implied, is made.

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Please refer to Appendix F titled "Report Limitations and Guidelines for Use" for additional information governing the use of this report.

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TABLES

Table 1. Project Property Information

Project No. 150218, West Duwamish CSO Project, Seattle, Washington

Address	Southeast corner of SW Michigan Street and 2nd Avenue SW
King County Tax Parcel	1.33-acre ¹ portion of parcel #5367202505
Location Description	The Project Property is located at the southeast corner of SW Michigan Street and 2nd Avenue SW, directly west of the 1st Avenue South Bridge, and north of Highland Park Way SW.
Property and Topography Description	The Project Property is currently a gravel parking lot that is leased by the Port of Seattle to American Best Trucking for commercial truck and trailer parking. There are no structures on the property.
	The Project Property is zoned General Industrial 1 (IG1 U/85) by the City of Seattle.
	The Project Property is located within the City of Seattle's 1st Avenue South Storm Drain Basin on the west side of the LDW and the T115 CSO Basin (Figure 3).
	Although part of the T115 Plant 1 Cleanup Site, the Project Property is not part of the T115 source control area (Figure 3).
	The Project Property is relatively flat and located approximately 350 feet southwest of the LDW at an elevation of approximately 118 feet, relative to the King County Metro datum (NGVD29+100 feet ²).
Current Property Owner	Port of Seattle 2711 Alaskan Way Seattle, Washington 98121
AO PLPs	Port of Seattle, Boeing Company
Prospective Property Owner	King County
Environmental Consultant	Aspect Consulting, LLC (Aspect) 710 2nd Avenue, Suite 550 Seattle, Washington 98104 206-328-7443

Notes

¹Acreage measured from King County IMAP accessed June 13, 2019, <https://gismaps.kingcounty.gov/iMap/>.

²Elevation data are reported in National Geodetic Vertical Datum of 1929 plus 100 feet (NGVD29+100 feet).

Table 2. Summary of Existing Explorations

Project No. 150218, West Duwamish CSO Project, Seattle, Washington

Date	Exploration Identification	Exploration Purpose	Chemical Analysis of Soil Samples	Contaminants Detected in Soil above PCULs	Chemical Analysis of Groundwater Samples	Contaminants Detected in Groundwater above PCULs
Jun-17	EB-1 to EB-5	Environmental	Yes	Yes (see Table D-1)	Yes	See Section 2.3.3
Jun-17	AB-1 to AB-20	Archaeological	No	--	No	--
Jun-17	MW-1	Geotechnical	No	--	No	-
May-18	MW-2 & MW-3	Geotechnical	No	--	No	--
May-18	B-4 & B-5	Geotechnical	No	--	No	--
May-18	CPT-1 to CPT-3	Geotechnical	No	--	No	--
May-22	MW-4 to MW-8	Environmental	Yes	Yes (see Table D-1)	Yes	Yes (see Table D-2)
Aug-22	MW-9 to MW-11	Geotechnical	No	--	No	--
Aug-22	APW-1	Geotechnical	No	--	No	--
Aug-22	MW-1 to MW-8	Environmental	No	--	Yes	Yes (see Table D-2)
Sep-22	PIT-1 to PIT-2	Geotechnical	No	--	No	--
Nov-22	MW-1 to MW-8	Environmental	No	--	Yes	Yes (see Table D-2)
Dec-22	MW-9 to MW-11	Environmental	No	--	Yes	Yes (see Table D-2)
Feb-23	MW-1 to MW-11	Environmental	No	-	Yes	Yes (see Table D-2)
May-23	MW-9 to MW-11	Environmental	No	--	Yes	No (see Table D-2)

Notes

PCUL = preliminary cleanup level (see Section 2.3.1 for more information)

Table 3. Well Construction Details and Water Levels

Project No. 150218, West Duwamish CSO Project, Seattle, Washington

Well Identification	Northing ¹	Easting ¹	Ground Surface Elevation ¹	Top of Casing (TOC) Elevation ¹	Screened Interval (feet bgs)	Screened Interval Soil Type ²	Date	Depth to Groundwater (feet below TOC)	Groundwater Elevation (feet) ³
Shallow (Dredge Fill) Wells									
MW-4	200724.09	1269283.25	112.93	112.56	4.5-9.5	ML/SP-SM (Fill)	5/23/2022	7.75	104.81
							8/18/2022	8.06	104.50
							11/21/2022	8.41	104.15
							12/28/2022	6.01	106.55
							2/22/2023	6.53	106.03
							5/31/2023	7.2	105.36
MW-5	200803.30	1269163.54	114.05	113.76	5.5-10.5	ML/SP-SM (Fill)	5/23/2022	8.13	105.63
							8/18/2022	9.10	104.66
							11/21/2022	9.78	103.98
							12/28/2022	8.49	105.27
							2/22/2023	7.86	105.9
							5/31/2023	8.35	105.41
MW-6	200691.01	1269065.80	115.51	115.09	7-12	ML/SP-SM (Fill)	5/23/2022	9.69	105.40
							8/18/2022	8.63	106.46
							11/21/2022	11.59	103.5
							12/28/2022	10.47	104.62
							2/22/2023	9.42	105.67
							5/31/2023	9.86	105.23
MW-7	200608.95	1269148.60	114.74	114.30	6.5-11.5	SP-SM/ML/SP-SM (Fill)	5/23/2022	8.57	105.73
							8/18/2022	9.69	104.61
							11/21/2022	10.45	103.85
							12/28/2022	8.57	105.73
							2/22/2023	8.19	106.11
							5/31/2023	8.81	105.49
MW-8	200711.92	1269187.11	113.81	113.09	4.5-9.5	ML/SP-SM (Fill)	5/23/2022	8.41	104.68
							8/18/2022	8.41	104.68
							11/21/2022	9.17	103.92
							12/28/2022	8.02	105.07
							2/22/2023	7.1	105.99
							5/31/2023	7.64	105.45
Deeper (Native) Wells									
MW-1	200707.21	1269169.72	114.34	114.04	17-27	ML (Alluvial floodplain; 17-20.5)	6/30/2017	12.5	101.54
							5/31/2018	12.7	101.34
							6/15/2018	13.9	100.14
						SP-SM (Alluvial channel; 20.5-27)	7/2/2018	12.9	101.14
							5/23/2022	12.40	101.64
							8/18/2022	12.67	101.37
							11/21/2022	12.48	101.56
							12/28/2022	9.91	104.13
							2/22/2023	11.34	102.70
							5/31/2023	13.03	101.01
MW-2	200774.01	1269248.20	113.43	113.03	30-40	SP-SM (Alluvial channel)	5/31/2018	12.6	100.43
							6/15/2018	13.5	99.53
							7/2/2018	12.1	100.93
							5/23/2022	11.45	101.58
							8/18/2022	11.64	101.39
							11/21/2022	11.35	101.68
							2/22/2023	10.33	102.7
							5/31/2023	12.36	100.67
MW-9	200810.63	1269165.62	114.16	113.78	27.5-37.5	SP-SM (Alluvial channel)	12/28/2022	9.16	104.62
							2/22/2023	10.97	102.81
							5/31/2023	12.96	100.82
MW-10	200727.65	1269275.43	112.92	112.48	30-40	SP-SM (Alluvial channel)	12/28/2022	8.10	104.38
							2/22/2023	9.69	102.79
							5/31/2023	10.68	101.80
MW-11	200703.94	1269069.21	115.69	115.14	30.5-40.5	SP-SM/SM (Alluvial channel)	12/28/2022	10.96	104.18
							2/22/2023	12.09	103.05
							5/31/2023	13.74	101.40
Other (Mixed Dredge Fill-Native) Well									
MW-3	200643.51	1269242.49	113.11	112.78	8-18	SP-SM/SM (Fill; 8-11.2)	5/31/2018	8.9	103.88
							6/15/2018	9.1	103.68
						OL (Alluvial floodplain; 11.2-18)	7/2/2018	9.3	103.48
							5/23/2022	7.51	105.27
							8/18/2022	8.62	104.16
							11/21/2022	9.39	103.39
							12/28/2022	NM	--
							2/22/2023	NM	--
							5/31/2023	NM	--

Notes:
 bgs - below ground surface
 TOC - top of casing
 na - not available
 NM - Not measured, because the well was inaccessible on the date indicated.
¹Wells MW-1 through MW-8 surveyed on 5-16-22 by Apex, wells MW-9 and MW-11 surveyed by Furtado & Associates on 3-7-2023; horizontal datum relative to NAD 83/2011 WASHINGTON NORTH ZONE; vertical datum = King County Metro datum (NAVD88 + 96.41 feet).
²Unified Soil Classification System (USCS), as defined in ASTM International (ASTM) D2488.
³Groundwater elevations are in feet above the King County Metro datum.

Table 4. Site-Specific Screening Levels and Soil COPC Analytical Data

Project 150218, West Duwamish CSO Project, Seattle, WA

Constituent (by analyte group)	Protection of Human Health - Direct Contact Unrestricted (SL-1)	Simplified TEE Unrestricted Land Use MTCA Table 749-2	Natural Background (SL-10)	Site-Specific Screening Level ²	Basis	EB-1	EB-2	EB-3	EB-4	EB-5	MW-4	MW-4	MW-4	MW-5	MW-5	MW-5	MW-6	MW-6
						06/27/2017 EB-1-7 7 Fill Yes	06/27/2017 EB-2-8 8 Fill Yes	06/27/2017 EB-3-7 7 Fill Yes	06/27/2017 EB-4-3 3 Fill No	06/28/2017 EB-5-6 6 Fill No	05/13/2022 MW-4-4.5 3.5-4.5 Fill No	05/13/2022 MW-4-9.5 8.5-9.5 Fill Yes	05/13/2022 MW-4-12.5 11.5-12.5 Native Yes	05/13/2022 MW-5-5.5 4.5 - 5.5 Fill No	05/13/2022 MW-5-10.5 9.5-10.5 Fill Yes	05/13/2022 MW-5-13 12-13 Native Yes	05/13/2022 MW-6-5.0 4-5 Fill No	05/13/2022 MW-6-12 11-12 Fill Yes
Total Petroleum Hydrocarbons																		
Gasoline-Range Organics	1500	200	na	200	human health (SL-1)	< 4.8 U	< 4.4 U	< 6.5 U	< 5.5 U	< 4.3 U	< 8.44 U	< 10.3 U	< 9.18 U	133	< 9.72 U	< 9.98 U	< 5.66 U	< 7.61 U
Diesel-Range Organics	na	na	na	na	eco (749-2)	< 30 U	< 27 U	< 34 U	< 33 U	< 29 U	< 7.12 U	< 7.35 U	24.6	< 6.46 U	< 7.21 U	9.88	< 5.39 U	< 6.14 U
Motor Oil-Range Organics	na	na	na	na	--	< 61 U	< 53 U	120	< 67 U	< 57 U	27.1	37.1	257	< 12.9 U	< 14.4 U	114	< 10.8 U	< 12.3 U
Diesel- and Oil-Range (Extended) Organics	na	460	na	460	eco (749-2)	--	--	--	--	--	27.1	37.1	282	< 12.9 U	< 14.4 U	124	< 10.8 U	< 12.3 U
Benzene, Toluene, Ethylbenzene and Xylenes																		
Benzene	18	na	na	18	human health (SL-1)	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.020 U	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	0.00044 J	0.00066 J	< 0.00126 U	0.00047 J
Metals																		
Arsenic	0.67	20	7.3	7.3	human health (SL-1)	< 12 U	< 11 U	< 14 U	< 13 U	< 11 U	3.15	4.62	7.04	4.77	1.74	5.8	1.62	1.73
Chromium	120000	42	48	48	eco (749-2)	16	14	16	63	14	57.2	14.7	14.3	43.6	7.9	15.3	7.86	10.1
Copper	3200	100	36	100	eco (749-2)	15	8.3	19	36	8.1	43.4	24.1	26.5	28.4	10.5	28.9	8.16	10.8
Nickel	1600	100	48	100	human health (SL-1)	10	6.2	25	72	6.5	83.7	11.6	12.7	65.1	5.8	10.3	6.3	6.6
Selenium	400	0.8	na	0.8	eco (749-2)	< 12 U	< 11 U	< 14 U	< 13 U	< 11 U	0.95	1.01	0.92	0.72	0.46 J	0.94	0.41 J	0.46 J
Silver	400	na	na	400	human health (SL-1)	< 3.0 U	< 2.7 U	< 3.4 U	< 3.3 U	< 2.8 U	0.11 J	0.07 J	0.1 J	0.07 J	0.04 J	0.09 J	0.03 J	0.04 J
Thallium	0.80	na	na	0.80	human health (SL-1)	< 1.2 U	< 1.1 U	< 1.4 U	< 1.3 U	< 1.1 U	0.11 J	0.06 J	0.05 J	0.07 J	< 0.25 U	0.09 J	0.03 J	< 0.24 U
Zinc	24000	270	85	270	eco (749-2)	31	23	34	74	22	81.2	28.2	32.6	53.6	19.1	26.7	20.3	21.1
Polychlorinated Biphenyls																		
Total PCBs (Sum of Aroclors)	1	2	na	1	human health (SL-1)	--	--	--	--	--	0.0039 J	ND	ND	ND	ND	ND	ND	0.0018 J
Polycyclic Aromatic Hydrocarbons (PAHs)																		
1-Methylnaphthalene	34	na	na	34	human health (SL-1)	< 0.0081 U	< 0.0071 U	0.017	< 0.0089 U	< 0.0076 U	0.00515	0.0012	0.00066	0.00108	0.00018 J	0.00079	0.00017 J	0.00043 J
Fluoranthene	3200	na	na	3200	human health (SL-1)	0.0099	< 0.0071 U	0.032	< 0.0089 U	< 0.0076 U	0.00158	0.00058 J	< 0.0005 UJ	0.029	0.00053 J	0.00052 J	< 0.0005 UJ	0.00205
Naphthalene	1600	na	na	1600	human health (SL-1)	< 0.0081 U	< 0.0071 U	0.019	< 0.0089 U	< 0.0076 U	0.00364	0.00051 J	0.00061	0.00075	< 0.0006 U	0.00062	< 0.0006 U	< 0.0006 U
Carcinogenic PAHs (cPAH)																		
Benzo(a)pyrene	0.19	30	na	0.19	human health (SL-1)	< 0.0081 U	< 0.0071 U	< 0.0091 U	< 0.0089 U	< 0.0076 U	0.00052 J	0.00021 J	0.00018 J	0.00959 J	0.00012 J	0.00022 J	0.0001 J	0.00061 J
Total cPAH TEQ ³	0.19	na	na	0.19	human health (SL-1)	--	--	0.0069	--	--	0.00079 J	0.00035 J	0.00033 J	0.013 J	0.00023 J	0.00040 J	0.00020 J	0.00099 J
Other Semivolatile Organic Compounds																		
Benzoic acid	320000	na	na	320000	human health (SL-1)	--	--	--	--	--	< 0.2 U	0.0629 J	0.271	< 0.2 U	< 0.2 U	0.181 J	< 0.2 U	< 0.199 U
Bis(2-ethylhexyl) phthalate	71	na	na	71	human health (SL-1)	--	--	--	--	--	< 0.05 UJ	< 0.0499 UJ	< 0.05 UJ	< 0.05 UJ	< 0.0499 UJ	< 0.05 UJ	< 0.0499 UJ	0.013 J
Diethyl phthalate	64000	na	na	64000	human health (SL-1)	--	--	--	--	--	< 0.05 U	< 0.0499 U	< 0.05 U	< 0.05 U	< 0.0499 U	< 0.05 U	< 0.0499 U	< 0.0499 U

Notes:

All data in milligrams per kilogram

Bold - indicates analyte detected above the laboratory reporting limit

Blue Shaded - indicates analyte detected at a concentration exceeding the site-specific screening level

COPC - contaminant of potential concern

ND - individual constituents not detected above laboratory reporting limits so a total is not calculated

U - Analyte not detected at or above Practical Quantitation Limit (PQL) shown

J - Reported value is an estimate below the PQL

UJ - Analyte not detected and the PQL is an estimate

"--" - indicates results not available

¹Depth of sample collected feet (ft) below ground surface (bgs).

²The site-specific screening levels are the lowest Lower Duwamish Waterway (LDW) Preliminary Cleanup Levels (PCULs) for the completed exposure pathways for the Site, which include direct contact (SL-1) and simplified TEE values for unrestricted land use, adjusted upward to natural background (SL-10), where appropriate, February 2023.

³Total cPAH benzo(a)pyrene toxic equivalent (TEQ) concentration calculated using compound-specific toxicity equivalency factors, in accordance with WAC 173-340-708(B)(e)(iii), using 1/2 the detection limit for non-detect results.

Table 4. Site-Specific Screening Levels and Soil COPC Analytical Data

Project 150218, West Duwamish CSO Project, Seattle, WA

Constituent (by analyte group)	Protection of Human Health - Direct Contact Unrestricted (SL-1)	Simplified TEE Unrestricted Land Use MTCA Table 749-2	Natural Background (SL-10)	Site-Specific Screening Level ²	Basis	Sample Location	MW-6	MW-7	MW-7	MW-7	MW-8	MW-8	MW-8
						Sample Date	05/13/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
						Sample Identification	MW-6-14	MW-7-4.5	MW-7-11.5	MW-7-13.5	MW-8-5.5	MW-8-9.5	MW-8-11
						Sample Depth (ft bgs) ¹	13-14	3.5-4.5	10.5-11.5	12.5-13.5	4.5-5.5	8.5-9.5	10-11
						Lithology	Native	Fill	Fill	Native	Fill	Fill	Native
						Saturated?	Yes	No	Yes	Yes	No	Yes	Yes
Total Petroleum Hydrocarbons													
Gasoline-Range Organics	1500	200	na	200	human health (SL-1)	< 10.5 U	< 6.89 U	< 6.4 U	< 19.1 U	< 9.89 U	< 8.84 U	< 9.2 U	
Diesel-Range Organics	na	na	na	na	eco (749-2)	< 7.31 U	7.88	8.56	32.3	6.73	10.8	8.21	
Motor Oil-Range Organics	na	na	na	na	--	68.2	57.8	43.5	322	26.6	30.5	32.5	
Diesel- and Oil-Range (Extended) Organics	na	460	na	460	eco (749-2)	68.2	65.7	52.1	354	33.3	41.3	40.7	
Benzene, Toluene, Ethylbenzene and Xylenes													
Benzene	18	na	na	18	human health (SL-1)	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	0.00044 J	< 0.0014 U	
Metals													
Arsenic	0.67	20	7.3	7.3	human health (SL-1)	3.75	1.85	1.76	11.5	5.95	2.46	12.6	
Chromium	120000	42	48	48	eco (749-2)	14.4	8.67	8.77	21.8	52.2	9.61	12.7	
Copper	3200	100	36	100	eco (749-2)	22	14.2	10.6	54.1	41.2	10.6	31.9	
Nickel	1600	100	48	100	human health (SL-1)	28.5	7.65	7.25	18.1	83.7	7.91	34.6	
Selenium	400	0.8	na	0.8	eco (749-2)	1.26	0.55	0.41 J	1.46	0.89	0.44 J	1.15	
Silver	400	na	na	400	human health (SL-1)	0.06 J	0.08 J	0.04 J	0.17 J	0.11 J	0.05 J	0.09 J	
Thallium	0.80	na	na	0.80	human health (SL-1)	0.06 J	0.07 J	< 0.25 U	0.11 J	0.1 J	0.03 J	0.21 J	
Zinc	24000	270	85	270	eco (749-2)	71.7	25.1	22.1	47.4	78.9	24	146	
Polychlorinated Biphenyls													
Total PCBs (Sum of Aroclors)	1	2	na	1	human health (SL-1)	ND	0.0042	0.0051	ND	ND	ND	ND	
Polycyclic Aromatic Hydrocarbons (PAHs)													
1-Methylnaphthalene	34	na	na	34	human health (SL-1)	0.0013	0.00014 J	0.00043 J	0.00041 J	0.00109	0.00589	0.00063	
Fluoranthene	3200	na	na	3200	human health (SL-1)	0.133	0.00117	0.00203	< 0.0005 UJ	0.00224	0.0503	< 0.0005 UJ	
Naphthalene	1600	na	na	1600	human health (SL-1)	0.003	< 0.0006 U	0.00049 J	0.00083	0.00082	0.00349	< 0.0006 U	
Carcinogenic PAHs (cPAH)													
Benzo(a)pyrene	0.19	30	na	0.19	human health (SL-1)	0.00445 J	0.00088 J	0.00128 J	0.00012 J	0.00083 J	0.0303 J	0.00019 J	
Total cPAH TEQ ³	0.19	na	na	0.19	human health (SL-1)	0.0084 J	0.0013 J	0.0017 J	0.00032 J	0.0012 J	0.039 J	0.00033 J	
Other Semivolatile Organic Compounds													
Benzoic acid	320000	na	na	320000	human health (SL-1)	0.0899 J	< 0.2 U	< 0.2 U	0.346	< 0.2 U	< 0.2 U	0.0403 J	
Bis(2-ethylhexyl) phthalate	71	na	na	71	human health (SL-1)	< 0.0498 UJ	0.0124 J	0.0463 J	< 0.0499 UJ	< 0.0499 UJ	< 0.0499 UJ	< 0.05 UJ	
Diethyl phthalate	64000	na	na	64000	human health (SL-1)	< 0.0498 U	< 0.0499 U	< 0.0499 U	0.0375 J	< 0.0499 U	< 0.0499 U	< 0.05 U	

Notes:

All data in milligrams per kilogram

Bold - indicates analyte detected above the laboratory reporting limit

Blue Shaded - indicates analyte detected at a concentration exceeding the site-specific screening level

COPC - contaminant of potential concern

ND - individual constituents not detected above laboratory reporting limits so a total is not calculated

U - Analyte not detected at or above Practical Quantitation Limit (PQL) shown

J - Reported value is an estimate below the PQL

UJ - Analyte not detected and the PQL is an estimate

"-" - indicates results not available

¹Depth of sample collected feet (ft) below ground surface (bgs).

²The site-specific screening levels are the lowest Lower Duwamish Waterway (LDW) Preliminary Cleanup Levels (PCLs) for the completed exposure pathways for the Site, which include direct contact (SL-1) and simplified TEE values for unrestricted land use, adjusted upward to natural background (SL-10), where appropriate, February 2023.

³Total cPAH benzo(a)pyrene toxic equivalent (TEQ) concentration calculated using compound-specific toxicity equivalency factors, in accordance with WAC 173-340-708(B)(e)(iii), using 1/2 the detection limit for non-detect results.

Table 5. Site-Specific Screening Levels and Groundwater COPC Analytical Data
 Project No. 150218, West Duwamish CSO Project, Seattle, Washington

Sample Location Sample Date Sample Identification Well Screen Lithology						Shallow (Dredge Fill) Wells																			
						MW-4			MW-5				MW-6				MW-7			MW-8					
						5/24/2022 MW-4-220524	8/18/22 MW-4-220818	11/22/2022 MW-4-112222	02/23/2023 MW-4-022323	5/23/2022 MW-5-220523	8/17/22 MW-5-220817	11/21/2022 MW-5-112122	02/22/2023 MW-5-022223	5/24/2022 MW-6-220524	8/18/22 MW-6-220818	11/21/2022 MW-6-112122	02/22/2023 MW-6-022223	5/24/2022 MW-7-220524	8/18/22 MW-7-220818	11/23/2022 MW-7-112322	02/23/2023 MW-7-022323	5/24/2022 MW-8-220524	8/18/22 MW-8-220818	02/23/2023 MW-8-022323	
Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Fill						
Constituent (by analyte group)	Protect Drinking Water (GW-1)	Protect Surface Water (GW-2)	Protect Sediment (GW-3)	Natural Background (GW-5)	Site Specific Screening Level ¹																				
Metals																									
Copper, dissolved	3.1			3.1	3.1	0.300 J	< 0.500 U	0.277 J	< 0.5 U	1.23	1.89	0.28 J	1.54	0.846	0.475 J	0.421 J	0.275 J	2.36	2.45	1.03	2.05	0.187 J	1.49	< 0.5 U	
Copper, total	640	3.1	14	na	3.1	0.263 J	< 0.500 U	1.36	0.229 J	1.11	1.90	0.394 J	1.74	0.841	0.715	0.326 J	1.78	2.34	2.50	3.32	1.53	0.314 J	0.359 J	0.182 J	
Mercury, dissolved	0.025			0.025	0.025	< 0.100 U	< 0.100 U	< 0.0001 U	< 0.1 U	< 0.100 U	< 0.100 U	< 0.0001 U	< 0.1 U	< 0.100 U	< 0.0001 U	< 0.1 U	< 0.1 U	< 0.100 U	< 0.100 U	< 0.0001 U	< 0.1 U	< 0.100 U	< 0.100 U	< 0.1 U	
Mercury, total	2	0.025	2	na	0.025	0.015 J	< 0.100 U	0.000031 J	< 0.1 U	< 0.100 UJ	< 0.100 U	< 0.0001 U	< 0.1 U	0.015 J	< 0.100 U	< 0.0001 U	< 0.1 U	0.021 J	< 0.100 U	0.000083 J	< 0.1 U	0.015 J	< 0.100 U	< 0.1 U	
Carcinogenic PAHs (cPAHs)																									
Benz(a)anthracene	na	1.60E-04	0.19	na	1.60E-04	< 0.011 U	< 0.010 U	< 0.01 U	0.0008 J	< 0.012 U	< 0.010 U	< 0.01 U	0.001 J	< 0.012 U	< 0.010 U	< 0.01 U	< 0.01 UJ	< 0.010 U	< 0.010 U	< 0.01 U	< 0.01 UJ	< 0.011 U	< 0.010 U	0.001 J	
Benzo(a)pyrene	0.2	1.60E-05	0.09	na	1.60E-05	< 0.011 U	< 0.010 U	< 0.01 U	< 0.01 U	< 0.012 U	< 0.010 U	< 0.01 U	< 0.01 U	< 0.012 U	< 0.010 U	< 0.01 U	< 0.01 UJ	< 0.010 U	< 0.010 U	< 0.01 U	< 0.01 UJ	< 0.011 U	< 0.010 U	< 0.01 U	
Benzo(b)fluoranthene	na	1.60E-04	na	na	1.60E-04	< 0.011 U	< 0.010 U	0.0009 J	0.0008 J	< 0.012 U	< 0.010 U	< 0.01 U	0.0009 J	< 0.012 U	< 0.010 U	< 0.01 U	0.0005 J	< 0.010 U	< 0.010 U	< 0.01 U	< 0.01 UJ	< 0.011 U	< 0.010 U	0.0008 J	
Dibenzo(a,h)anthracene	na	1.60E-05	0.0068	na	1.60E-05	< 0.011 U	< 0.010 U	< 0.01 U	< 0.01 U	< 0.012 U	< 0.010 U	< 0.01 U	< 0.01 U	< 0.012 U	< 0.010 U	< 0.01 U	< 0.01 UJ	< 0.010 U	< 0.010 U	< 0.01 U	< 0.01 UJ	< 0.011 U	< 0.010 U	< 0.01 U	
Indeno(1,2,3-cd)pyrene	na	1.60E-04	0.016	na	1.60E-04	< 0.011 U	< 0.010 U	0.001 J	< 0.01 U	< 0.012 U	< 0.010 U	< 0.01 U	< 0.01 U	< 0.012 U	< 0.010 U	< 0.01 U	< 0.01 UJ	< 0.010 U	< 0.010 U	< 0.01 U	< 0.01 UJ	< 0.011 U	< 0.010 U	< 0.01 U	
Total cPAHs TEQ ²	0.2	1.60E-05	0.032	na	1.60E-05	ND	ND	0.007 J	0.007 J	ND	ND	ND	0.007 J	0.009 J	ND	ND	0.007 J	ND	ND	ND	ND	ND	ND	ND	0.007 J
Other Semivolatile Organic Compounds																									
Bis(2-ethylhexyl) phthalate	6	0.046	0.62	na	0.046	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 UJ	< 0.2 U	< 0.2 U	< 0.2 UJ	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 UJ	
Hexachlorobenzene	0.27	5E-06	0.014	na	5E-06	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	7.3	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 UJ	< 0.2 U	< 0.2 U	< 0.2 UJ	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 UJ	
Pentachlorophenol	1	0.002	0.88	na	0.002	< 1.0 U	< 1.0 UJ	< 1 UJ	< 1 U	< 1.0 U	< 1.0 UJ	< 1 UJ	< 1 U	< 1.0 U	< 1.0 UJ	< 1 UJ	< 1 U	< 1.0 U	< 1.0 UJ	< 1 UJ	< 1 UJ	< 1.0 U	< 1.0 UJ	< 1 UJ	
Field Parameters																									
Temperature (degrees Celsius)	--	--	--	--	--	10.9	18.7	13.0	8.86	11.7	16.4	14.58	10.60	12.5	16.88	14.59	11.89	11.9	16.7	14.52	9.89	12.9	18.4	10.22	
Specific Conductance (uS/cm)	--	--	--	--	--	261.6	367.9	439.77	324.51	585.6	533.4	479.14	594.01	232.6	317.55	317.65	276.48	244.00	339.6	336.8	384.66	414	655	676.22	
Dissolved Oxygen (milligrams per liter)	--	--	--	--	--	0.18	1.74	0.89	1.30	0.22	0.68	1.23	0.50	0.22	1.55	1.47	1.43	1.04	1.35	1.71	1.19	0.15	0.85	1.29	
pH (pH units)	--	--	--	--	--	6.47	6.14	6.44	6.60	6.44	6.16	6.42	6.42	5.86	6.02	6.19	6.01	6.24	6.16	6.39	6.41	6.51	6.1	6.56	
Oxidation Reduction Potential (millivolts)	--	--	--	--	--	68.3	84.6	-60.4	-22.4	82.4	75.8	-70.1	25.9	85	-27.2	-25.8	50.8	70.8	84.7	-6.9	15.2	52.9	98.8	-40.0	
Turbidity (NTU)	--	--	--	--	--	3.71	2.49	0.27	4.79	10.3	3.11	77.14	2.87	7.63	1.13	0.44	2.70	5.32	2.5	1.2	12.33	8.65	4.68	2.23	

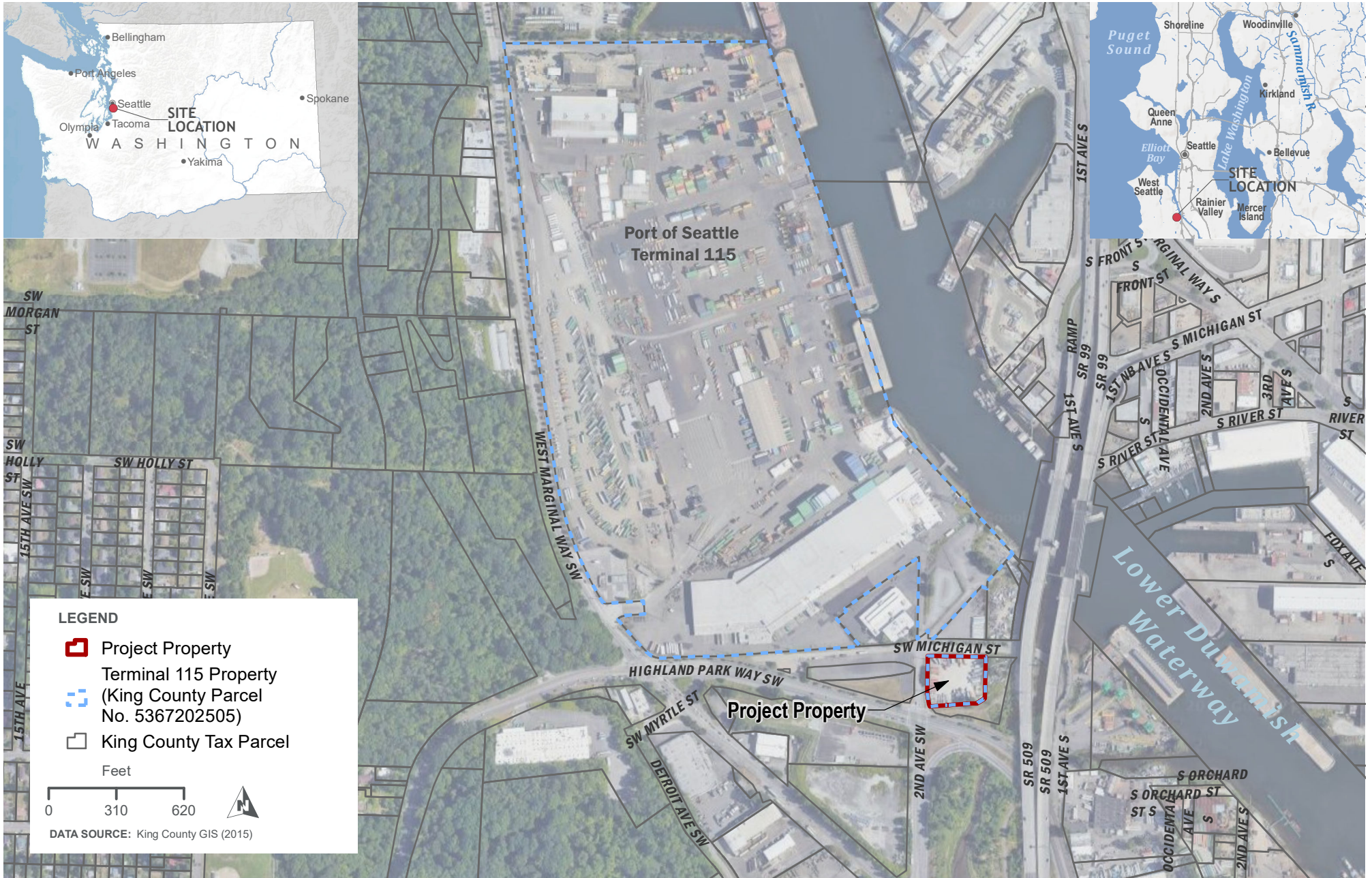
Notes:
 All results in micrograms per liter, unless indicated otherwise.
 Bold - Indicates analyte detected above the laboratory reporting limit
 Blue Shaded - Indicates analyte detected at a concentration exceeding the site-specific screening level
 ND - Individual constituents not detected above laboratory reporting limits, so a total is not calculated
 U - Analyte not detected at or above Practical Quantitation Limit (PQL) shown
 J - Reported value is an estimate below the PQL
 UJ - Analyte not detected and the PQL is an estimate
 C - Result may be influenced by unconfirmed contamination as part of the analytical process.
 uS/cm = microSiemens per centimeter
¹The site-specific screening levels are the Lower Duwamish Waterway (LDW) Preliminary Cleanup Levels (PCULs) for the complete exposure pathways for the Project Property, which consists of the protection of drinking water (GW-1), protection of surface water (GW-2), and protection of sediment (GW-3), adjusted upward to natural background (GW-5), if applicable, February 2023. Analytes for which PCULs have not been established are indicated as "na"
²Total cPAH benzo(a)pyrene toxic equivalent (TEQ) concentration calculated using compound-specific toxicity equivalency factors, in accordance with WAC 173-340-708(8)(e)(iii), using 1/2 the detection limit for non-detect results.

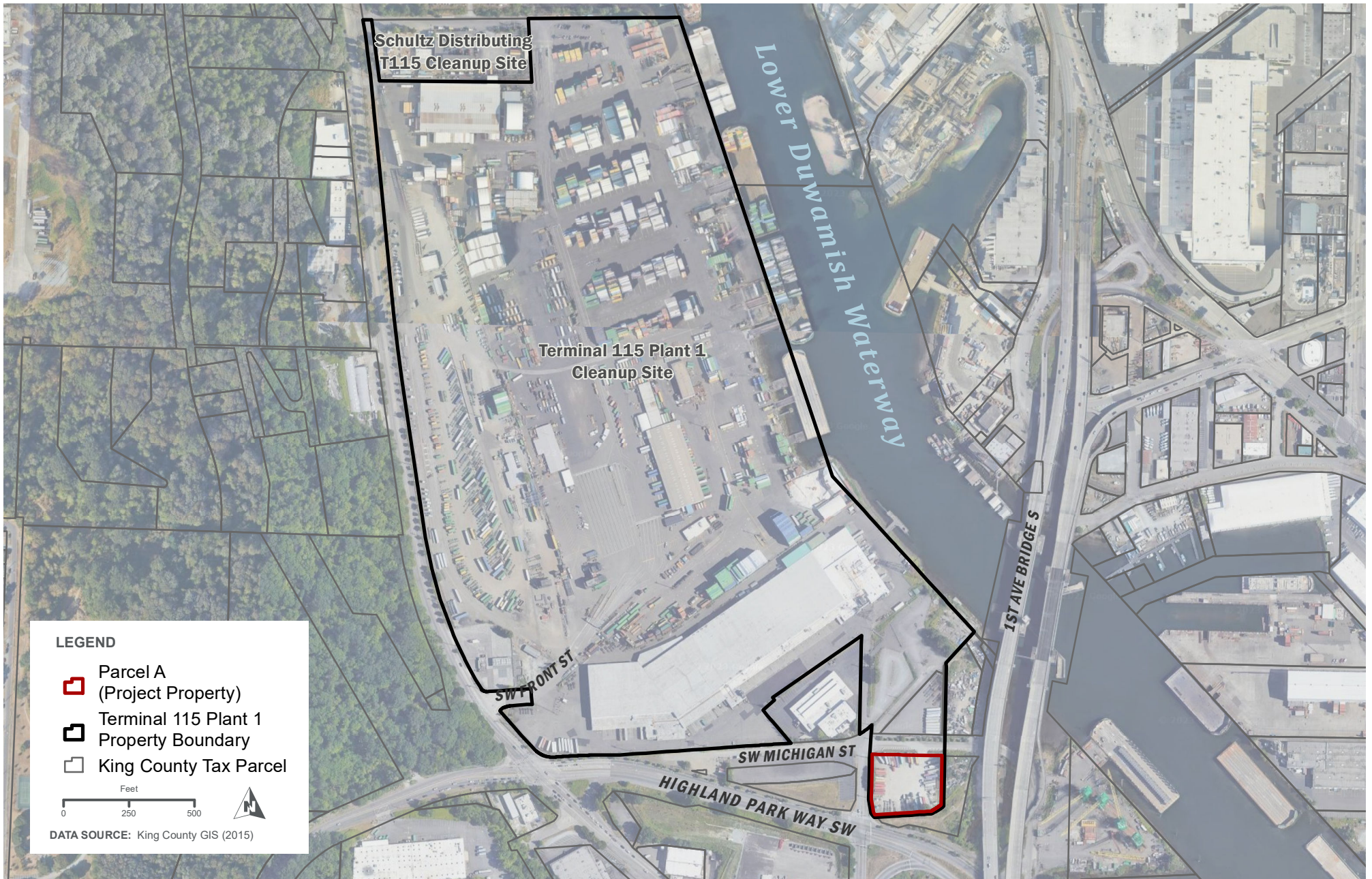
Table 6. Simplified TEE - Exposure Analysis

Project No. 150218, West Duwamish CSO Project, Seattle, Washington




Estimate the area of contiguous (connected) undeveloped land on or within 500 feet of any area of the contaminated soil to the nearest 0.50 acres.		
1) Enter the number of points corresponding to the area of contiguous undeveloped land (see MTCA Table 749-1 for points)	2.0 acres	8
2) Is this an industrial or commercial property? If yes, enter a 3. If no, enter a 1.	Yes	3
3) Enter a score for the habitat quality of the contaminated soil and surrounding area (High =1; Intermediate = 2; Low =3)	Low	3
4) Is the undeveloped land like to attract wildlife? If yes, enter a 1. If no, enter a 2.	No	2
5) Are there any of the following hazardous substances present in soil (see MTCA Table 749-1 for list), If yes, enter a 1. If no, enter a 4.	Yes	1
Add the numbers in boxes 2 through 5 and enter it to the right. If this number is larger than the number in box 1, the simplified TEE may be ended under WAC 173-340-7292(2)(a)(ii).	--	9

FIGURES





LEGEND

-  Parcel A (Project Property)
-  Terminal 115 Plant 1 Property Boundary
-  King County Tax Parcel

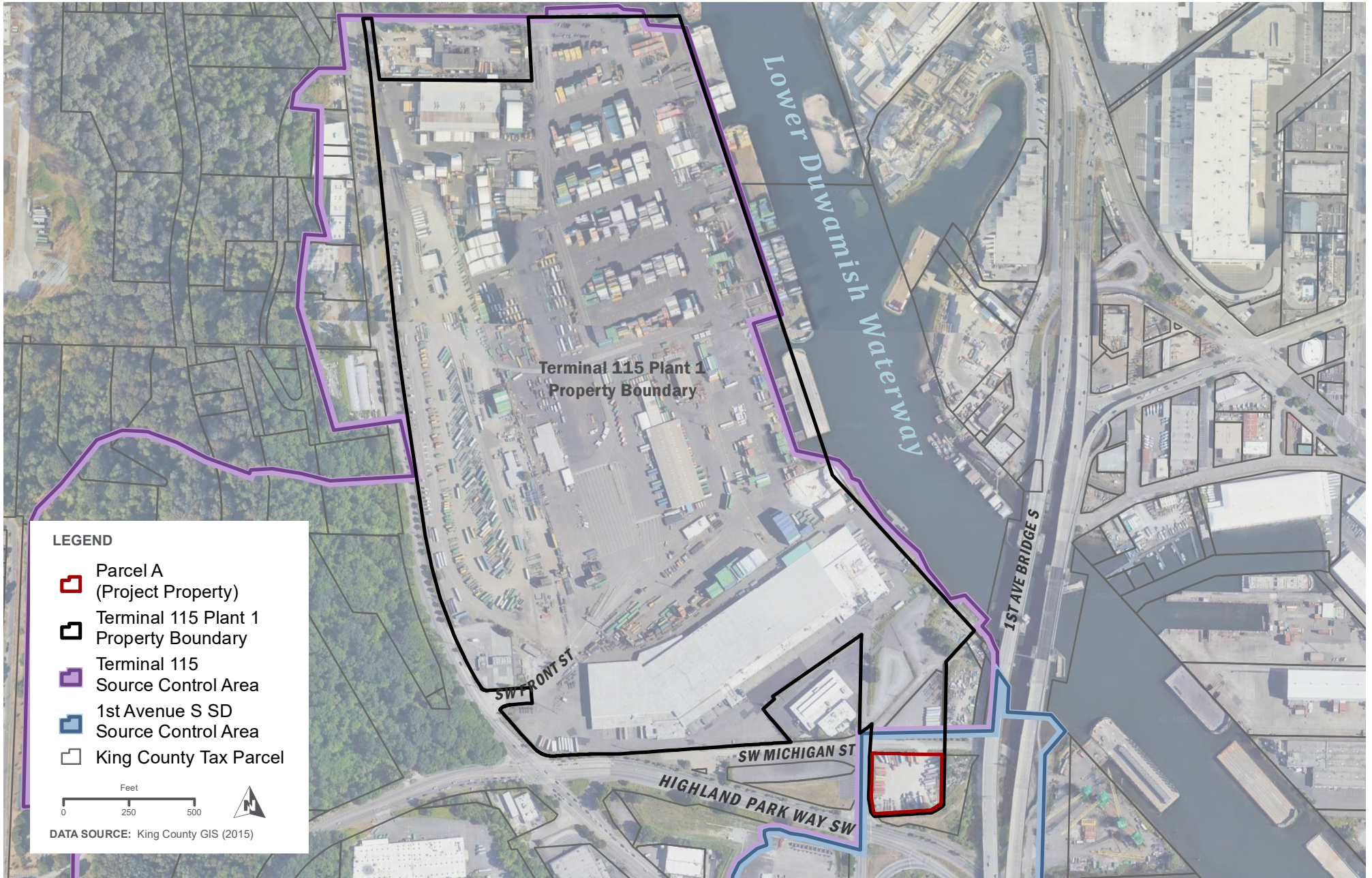


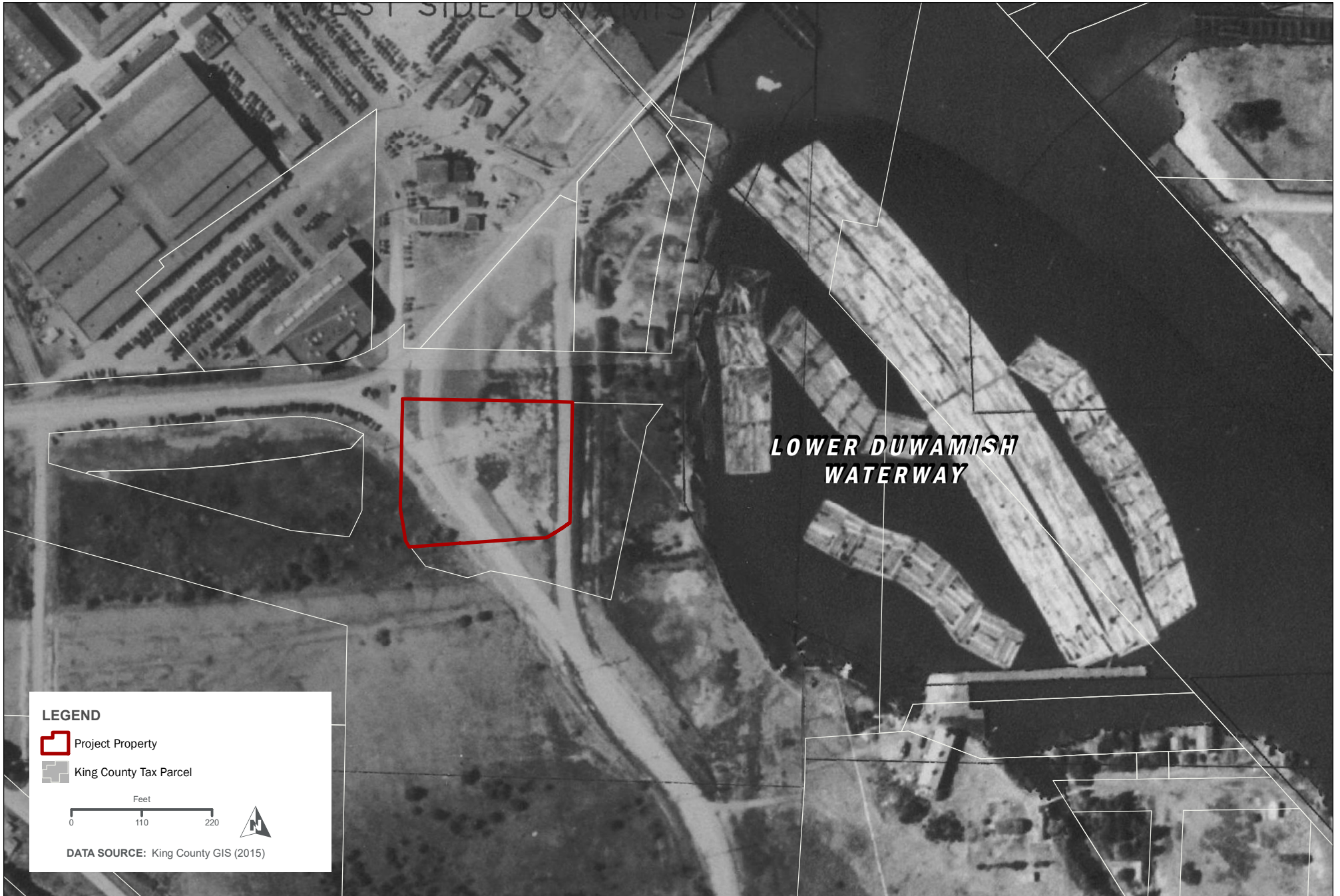
DATA SOURCE: King County GIS (2015)



REGULATORY BOUNDARIES MAP
REMEDIAL INVESTIGATION REPORT

FIGURE 2

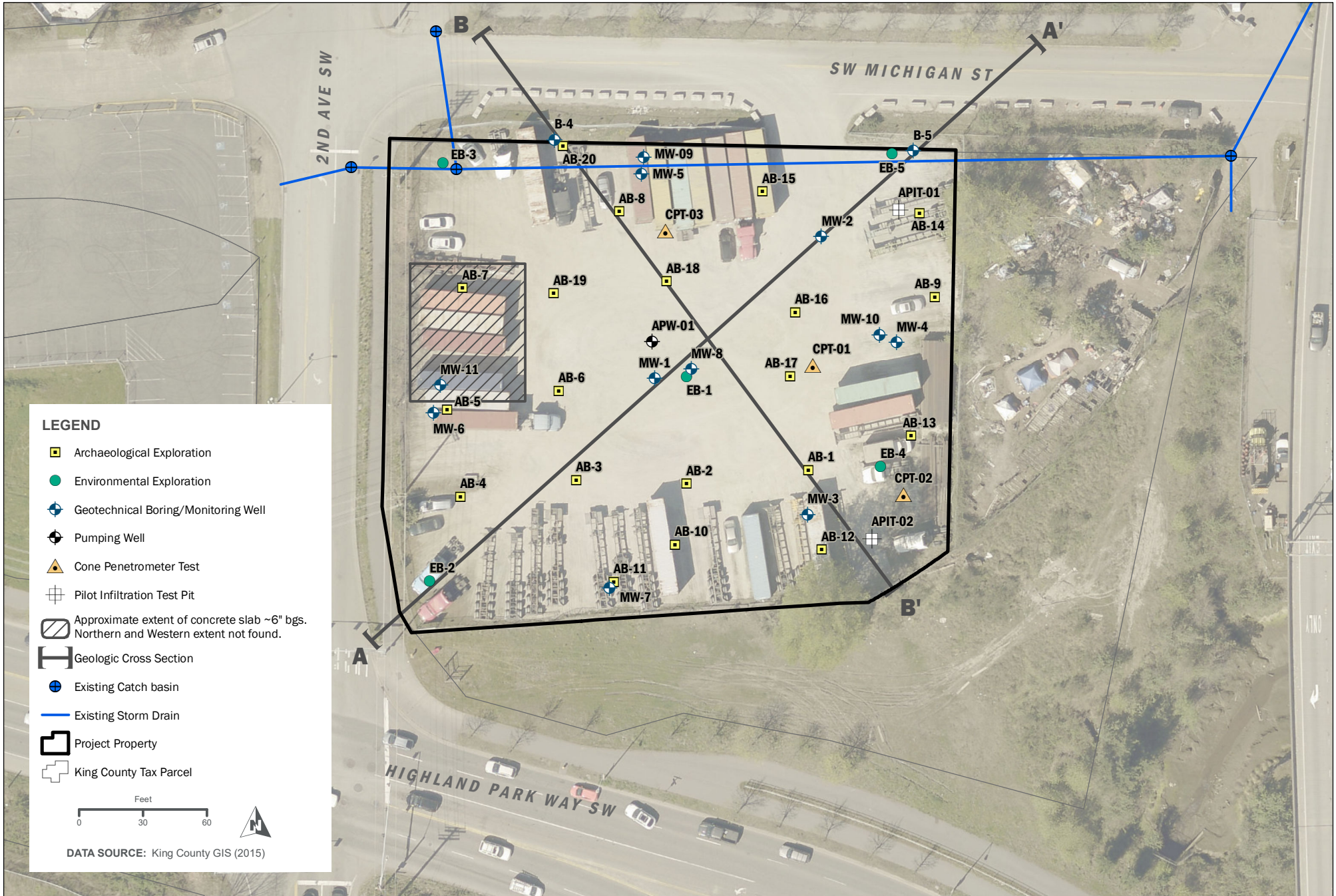


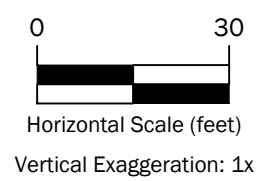
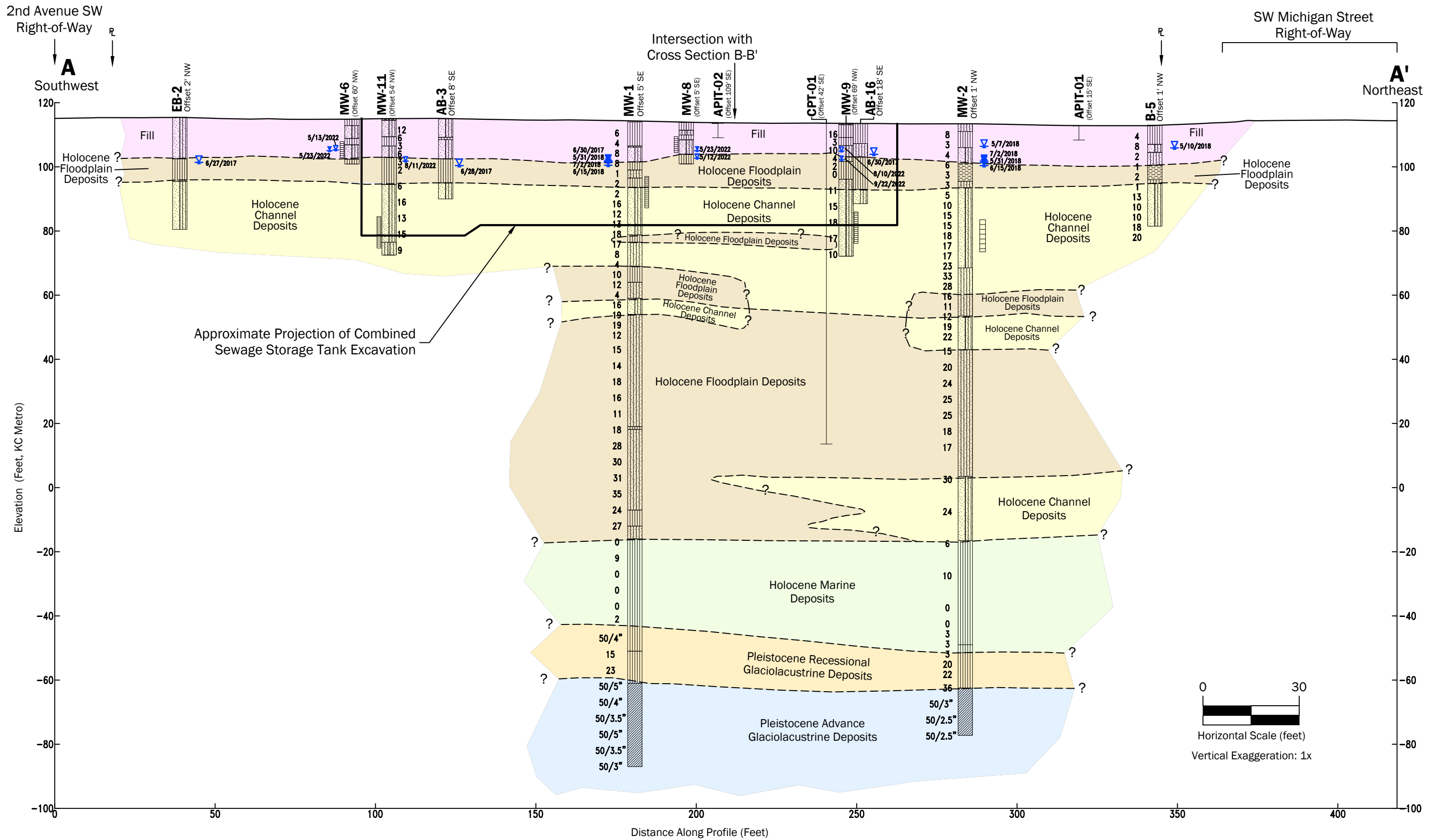


HISTORICAL AERIAL PHOTOGRAPH – 1936
REMEDIAL INVESTIGATION REPORT

FIGURE 4







Lithology Graphics

SM: USCS Silty Sand	ML: USCS Silt	SP-SM: USCS Poorly graded Sand with Silt
OL: USCS Low Plasticity Organic silt or clay	CL: USCS Low Plasticity Clay	GP: USCS Poorly graded Gravel
GM: USCS Silty Gravel	SW: USCS Well-graded Sand	SP/ML: USCS poorly graded sand/silt

Water Level Measuring Point

Well Screen Interval

SPT Blow Count N Value — 14

B-01 — Borehole ID

Water Level in Borehole at time of drilling

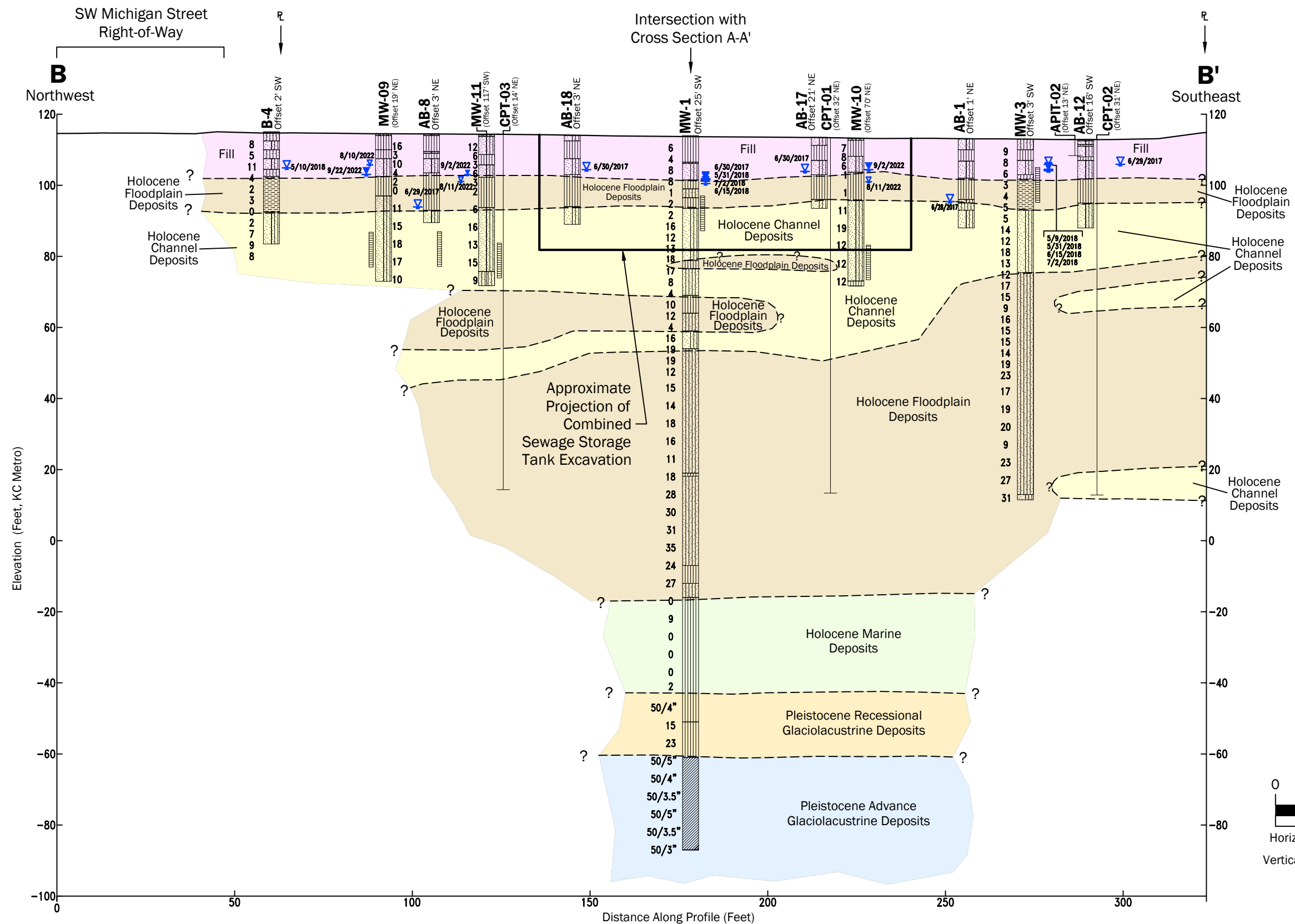
Water Level in Well, Date

Material Type (see Lithology Graphics)



GEOLOGIC CROSS SECTION A-A'
REMEDIAL INVESTIGATION REPORT

FIGURE 6



Lithology Graphics

SM: USCS Silty Sand	ML: USCS Silt	SP-SM: USCS Poorly graded Sand with Silt
OL: USCS Low Plasticity Organic silt or clay	CL: USCS Low Plasticity Clay	GP: USCS Poorly graded Gravel
GM: USCS Silty Gravel	SW: USCS Well-graded Sand	SP/ML: USCS poorly graded sand/silt

Water Level Measuring Point

Well Screen Interval

SPT Blow Count N Value — 14

B-01 — Borehole ID

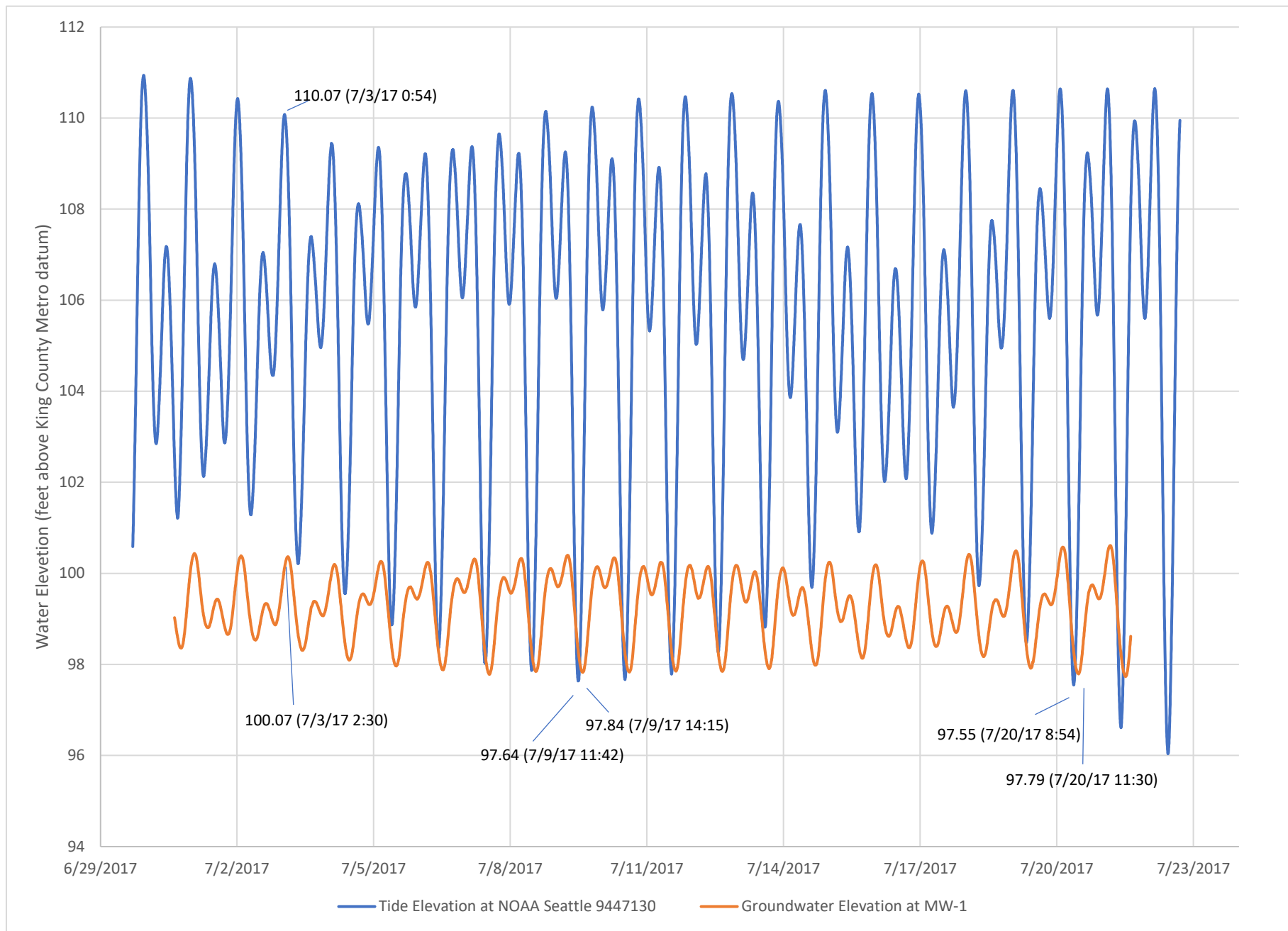
Water Level in Borehole at time of drilling

Water Level in Well, Date

Material Type (see Lithology Graphics)



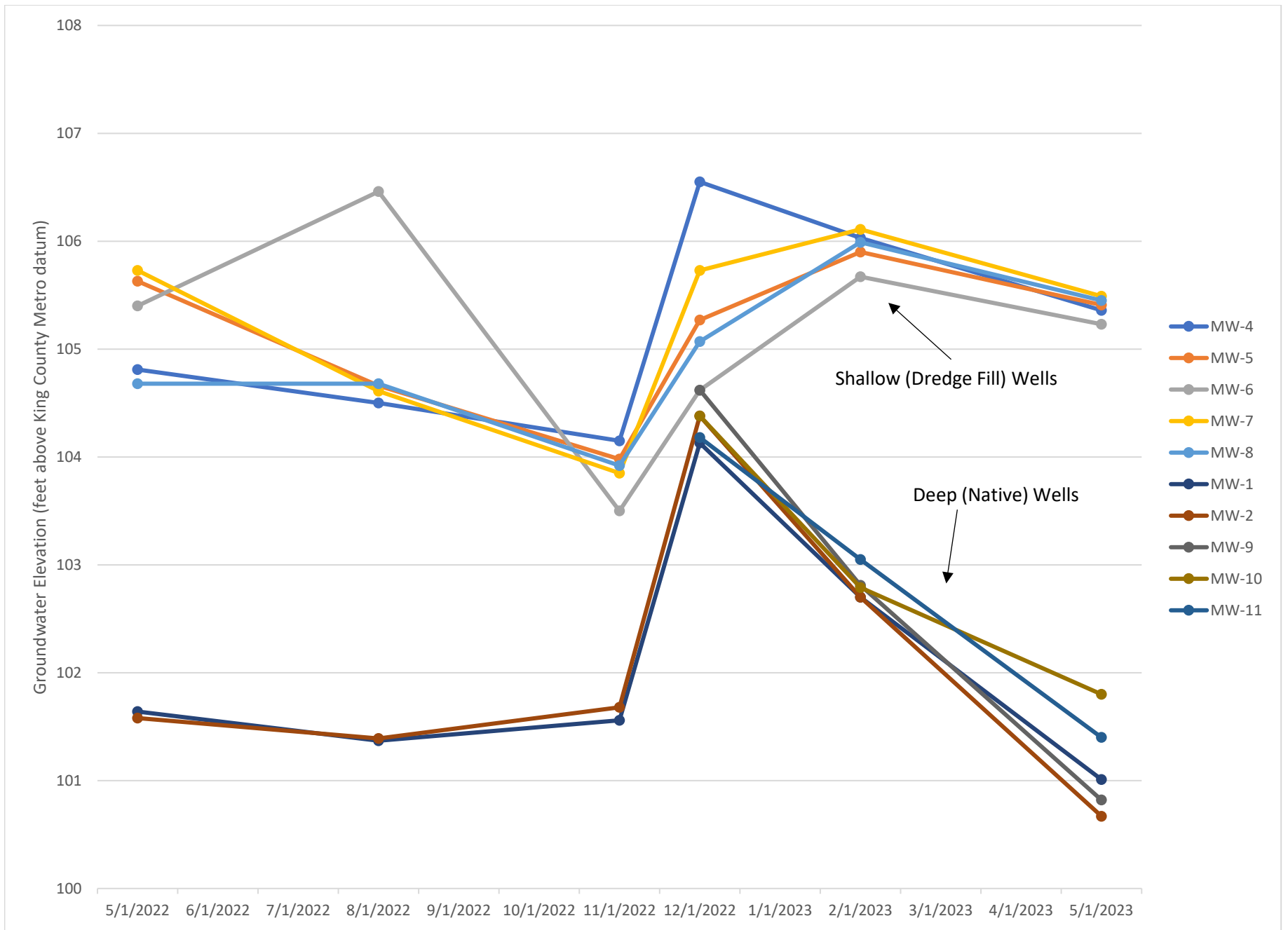
GEOLOGIC CROSS SECTION B-B'
REMEDIAL INVESTIGATION REPORT
 FIGURE 7



Comparison of Tide Elevations and Groundwater Elevations at Well MW-1

Remedial Investigation Report

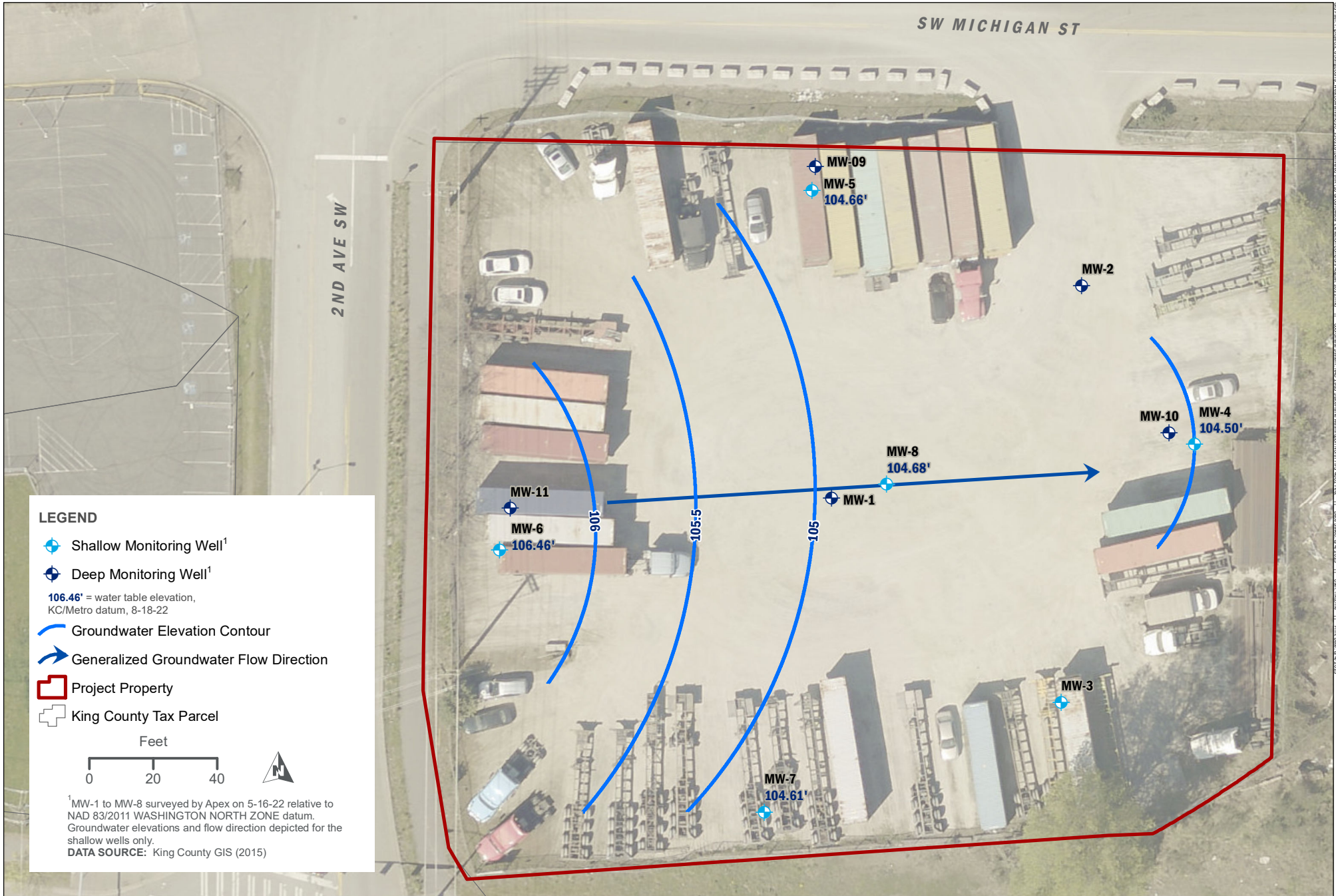
Figure 8



2022-2023 Groundwater Elevations in Property Monitoring Wells

Remedial Investigation Report

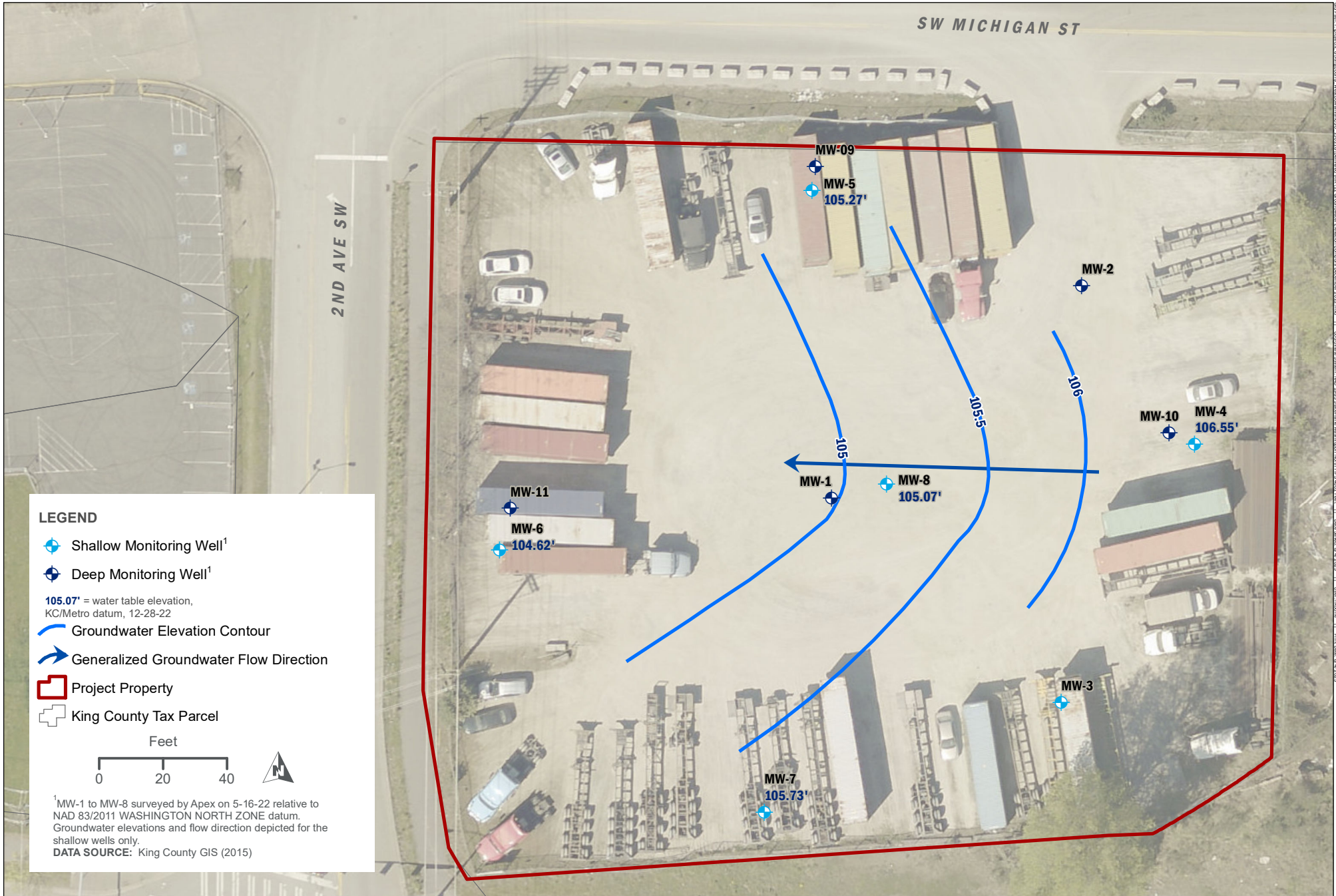
Figure 9



GROUNDWATER ELEVATION CONTOURS - AUGUST 2022
REMEDIAL INVESTIGATION REPORT

FIGURE 10

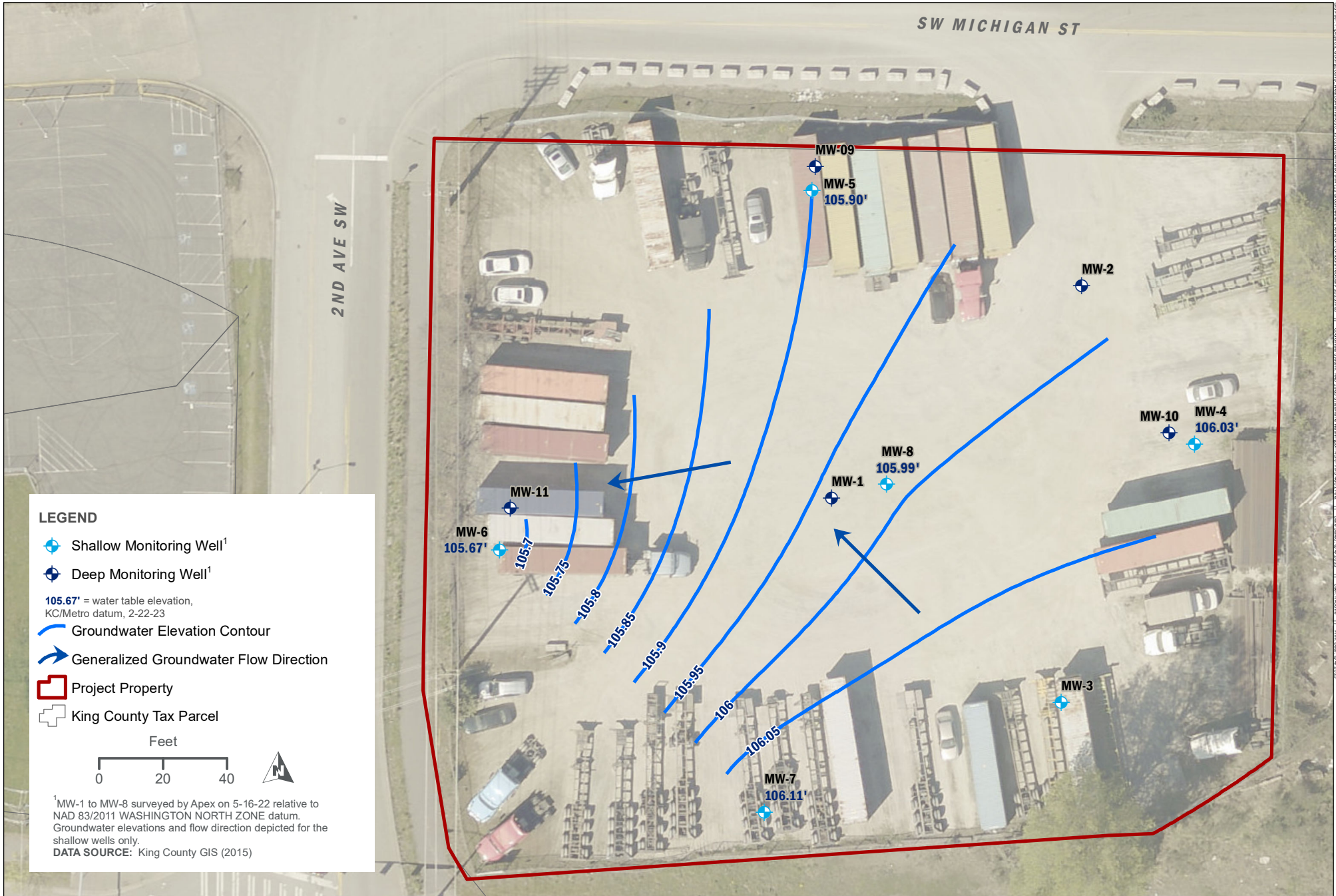




GROUNDWATER ELEVATION CONTOURS - DECEMBER 2022
REMEDIAL INVESTIGATION REPORT

FIGURE 11

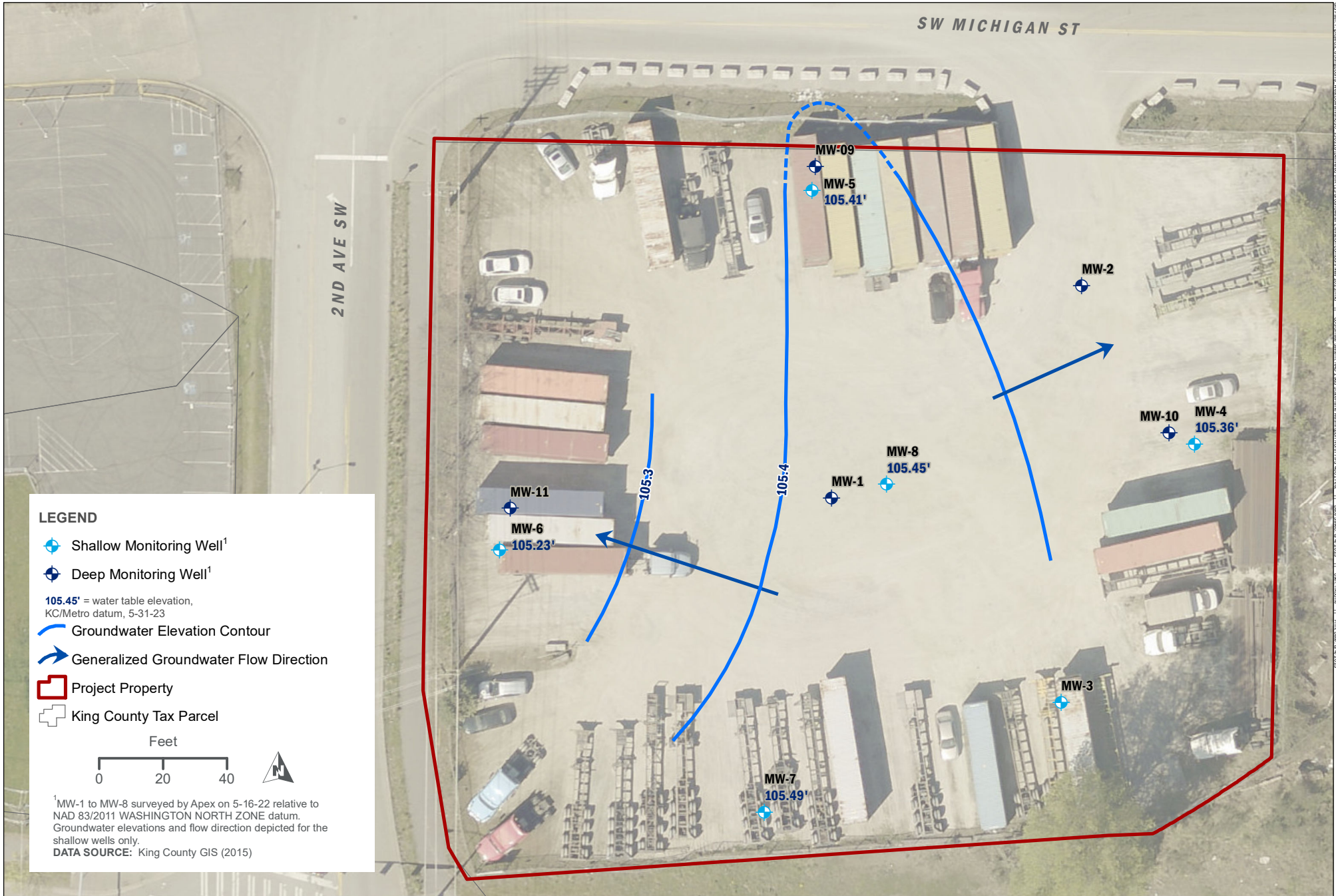




GROUNDWATER ELEVATION CONTOURS - FEBRUARY 2023
REMEDIAL INVESTIGATION REPORT

FIGURE 12





LEGEND

- Shallow Monitoring Well¹
- Deep Monitoring Well¹
- 105.45' = water table elevation, KC/Metro datum, 5-31-23
- Groundwater Elevation Contour
- Generalized Groundwater Flow Direction
- Project Property
- King County Tax Parcel

Feet

0 20 40

¹MW-1 to MW-8 surveyed by Apex on 5-16-22 relative to NAD 83/2011 WASHINGTON NORTH ZONE datum. Groundwater elevations and flow direction depicted for the shallow wells only.
DATA SOURCE: King County GIS (2015)

GROUNDWATER ELEVATION CONTOURS - MAY 2023
REMEDIAL INVESTIGATION REPORT

FIGURE 13



Appendix A.

Historical Aerial Photographs



West Duwamish CSO

150 SW Michigan Street

Seattle, WA 98106

Inquiry Number: 5289745.8

May 11, 2018

The EDR Aerial Photo Decade Package



6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

05/11/18

Site Name:

West Duwamish CSO
150 SW Michigan Street
Seattle, WA 98106
EDR Inquiry # 5289745.8

Client Name:

Aspect Consulting LLC.
401 2nd Ave. S
Seattle, WA 98104
Contact: Amy Tice



Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

<u>Year</u>	<u>Scale</u>	<u>Details</u>	<u>Source</u>
2015	1"=500'	Flight Year: 2015	USDA/NAIP
2011	1"=500'	Flight Year: 2011	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
1991	1"=500'	Flight Date: July 02, 1991	USGS
1990	1"=500'	Acquisition Date: July 10, 1990	USGS/DOQQ
1985	1"=500'	Flight Date: June 19, 1985	NRWA
1980	1"=500'	Flight Date: July 08, 1980	USDA
1977	1"=500'	Flight Date: September 05, 1977	USGS
1969	1"=500'	Flight Date: June 30, 1969	USGS
1965	1"=500'	Flight Date: June 30, 1965	USGS
1956	1"=500'	Flight Date: August 07, 1956	USC&GS
1953	1"=500'	Flight Date: September 09, 1953	U of WA
1943	1"=500'	Flight Date: March 05, 1943	DIA
1936	1"=500'	Flight Date: January 01, 1936	KCDOT

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INQUIRY #: 5289745.8

YEAR: 2015

— = 500'





INQUIRY # 5289745.8

YEAR: 2011

—= 500'





INQUIRY #: 5289745.8

YEAR: 2006

— = 500'



7-2-91



INQUIRY # 5289745.8

YEAR: 1991

— = 500'





INQUIRY #: 5289745.8

YEAR: 1990

— = 500'



NA SP-85

16-055-07

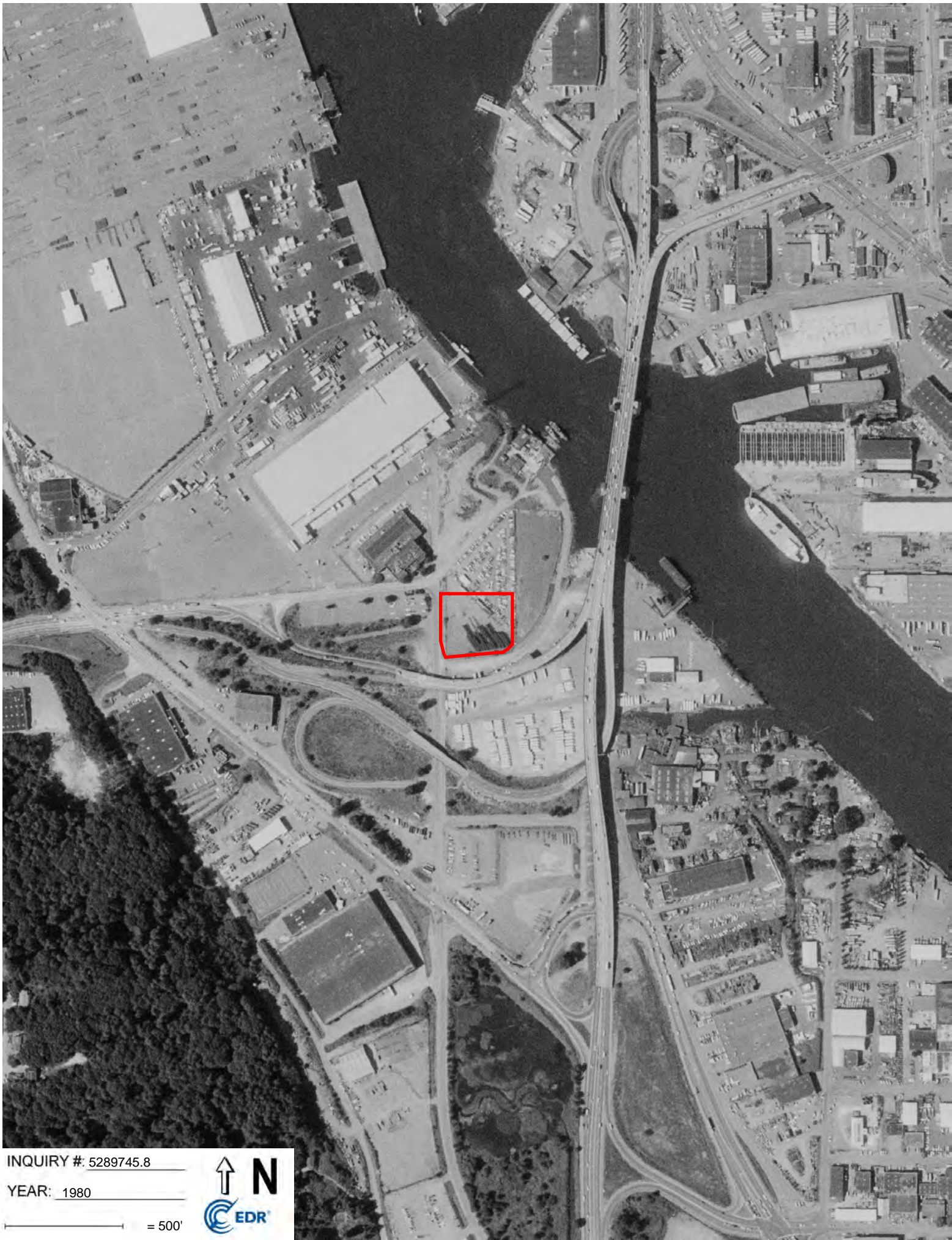


INQUIRY #: 5289745.8

YEAR: 1985

— = 500'





INQUIRY #: 5289745.8

YEAR: 1980

— = 500'





INQUIRY #: 5289745.8

YEAR: 1977

— = 500'



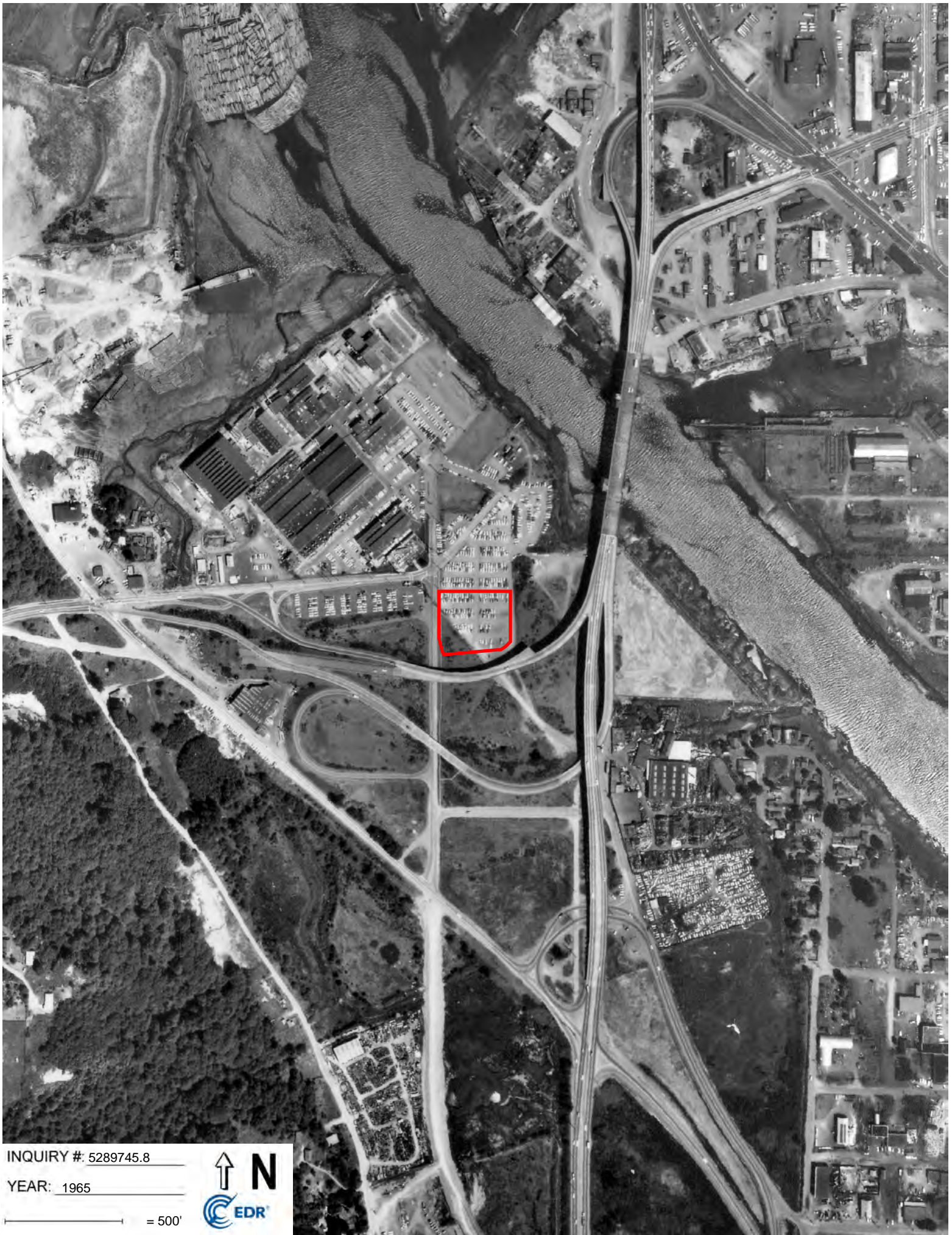


INQUIRY #: 5289745.8

YEAR: 1969

— = 500'





INQUIRY #: 5289745.8

YEAR: 1965

— = 500'



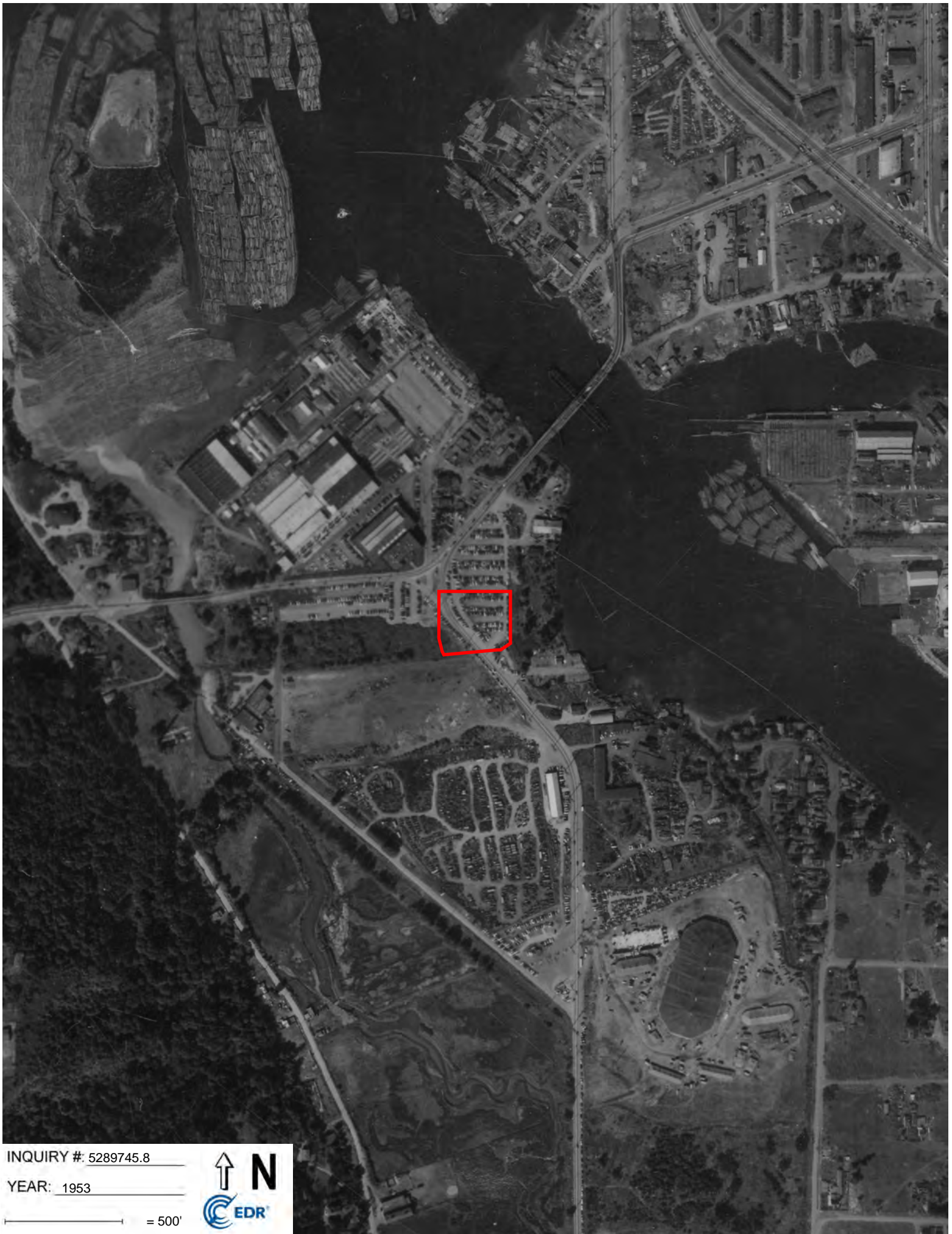


INQUIRY #: 5289745.8

YEAR: 1956

— = 500'





INQUIRY #: 5289745.8

YEAR: 1953

— = 500'





INQUIRY #: 5289745.8

YEAR: 1943

— = 500'





INQUIRY #: 5289745.8

YEAR: 1936

— = 500'



Appendix B.

Boring and Well Construction Logs

Soil Classification		Terms Describing Relative Density and Consistency		
		Density	SPT ⁽²⁾ blows/foot	
Coarse-Grained Soils - More than 50% Retained on No. 200 Sieve	Gravels - More than 50% ⁽¹⁾ of Coarse Fraction Retained on No. 4 Sieve	Well-graded gravel and gravel with sand, little to no fines	Very Loose 0 to 4	
	Sands - 50% ⁽¹⁾ or More of Coarse Fraction Passes No. 4 Sieve	GP	Poorly-graded gravel and gravel with sand, little to no fines	Loose 4 to 10
		GM	Silty gravel and silty gravel with sand	Medium Dense 10 to 30
	Fine-Grained Soils - 50% or More Passes No. 200 Sieve	GC	Clayey gravel and clayey gravel with sand	Dense 30 to 50
		SW	Well-graded sand and sand with gravel, little to no fines	Very Dense >50
		SP	Poorly-graded sand and sand with gravel, little to no fines	Consistency
SM		Silty sand and silty sand with gravel	Very Soft 0 to 2	
Highly Organic Soils	SC	Clayey sand and clayey sand with gravel	Soft 2 to 4	
	ML	Silt, sandy silt, gravelly silt, silt with sand or gravel	Medium Stiff 4 to 8	
	CL	Clay of low to medium plasticity; silty, sandy, or gravelly clay, lean clay	Stiff 8 to 15	
	OL	Organic clay or silt of low plasticity	Very Stiff 15 to 30	
	MH	Elastic silt, clayey silt, silt with micaceous or diatomaceous fine sand or silt	Hard >30	
	CH	Clay of high plasticity, sandy or gravelly clay, fat clay with sand or gravel		
Highly Organic Soils	OH	Organic clay or silt of medium to high plasticity		
	PT	Peat, muck and other highly organic soils		

Component Definitions	
Descriptive Term	Size Range and Sieve Number
Boulders	Larger than 12"
Cobbles	3" to 12"
Gravel	3" to No. 4 (4.75 mm)
Coarse Gravel	3" to 3/4"
Fine Gravel	3/4" to No. 4 (4.75 mm)
Sand	No. 4 (4.75 mm) to No. 200 (0.075 mm)
Coarse Sand	No. 4 (4.75 mm) to No. 10 (2.00 mm)
Medium Sand	No. 10 (2.00 mm) to No. 40 (0.425 mm)
Fine Sand	No. 40 (0.425 mm) to No. 200 (0.075 mm)
Silt and Clay	Smaller than No. 200 (0.075 mm)

⁽³⁾ Estimated Percentage		Moisture Content
Percentage by Weight	Modifier	
<5	Trace	Dry - Absence of moisture, dusty, dry to the touch
5 to 15	Slightly (sandy, silty, clayey, gravelly)	Slightly Moist - Perceptible moisture
15 to 30	Sandy, silty, clayey, gravelly	Moist - Damp but no visible water
30 to 49	Very (sandy, silty, clayey, gravelly)	Very Moist - Water visible but not free draining
		Wet - Visible free water, usually from below water table

Symbols	
Sampler Type	Description
2.0" OD Split-Spoon Sampler (SPT)	Continuous Push
Bulk sample	Non-Standard Sampler
Grab Sample	3.0" OD Thin-Wall Tube Sampler (including Shelby tube)
	Portion not recovered

(1) Percentage by dry weight	(5) Combined USCS symbols used for fines between 5% and 15% as estimated in General Accordance with Standard Practice for Description and Identification of Soils (ASTM D-2488)
(2) (SPT) Standard Penetration Test (ASTM D-1586)	
(3) In General Accordance with Standard Practice for Description and Identification of Soils (ASTM D-2488)	
(4) Depth of groundwater	ATD = At time of drilling BGS = below ground surface

Classifications of soils in this report are based on visual field and/or laboratory observations, which include density/consistency, moisture condition, grain size, and plasticity estimates and should not be construed to imply field or laboratory testing unless presented herein. Visual-manual and/or laboratory classification methods of ASTM D-2487 and D-2488 were used as an identification guide for the Unified Soil Classification System.



Exploration Log Key

DATE:	PROJECT NO.
DESIGNED BY:	
DRAWN BY:	FIGURE NO.
REVISED BY:	B-1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269185 N:200708

EB-1

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Direct push rig

Percussion hammer

114'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Zack

Direct push

6/27/2017

NA

16' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
110		Backfilled with 3/8" bentonite chips	S1	EB-1-7 NWTPH-Gx, NWTPH-Dx, PAHs, PCBs, Priority Pollutant Metals, Pentachlorophenol	PID= 0.0	FILL	Slightly moist, gray, slightly silty SAND (SP-SM); fine to coarse sand, no sheen, no odor	5
105			S2		PID= 0.0		Becomes dark gray, fine sand	
100		S3	PID= 0.0		Slightly moist, gray, slightly sandy SILT (ML); trace coarse sand, no sheen, no odor			
95		▽ 6/27/2017	S4		PID= 0.0	HOLOCENE ALLUVIUM - Floodplain Deposits	Slightly moist, dark gray to black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	10
90			S5		PID= 0.0		Very moist, dark brown, very sandy SILT (ML); trace wood and roots, no sheen, no odor	
85			S6		PID= 0.0		HOLOCENE ALLUVIUM - Channel Deposits	
80		S7	PID= 0.0		Bottom of exploration at 35 ft. bgs. Note: Grab groundwater sample EB-1-062717 collected	20		
75								
								30
								35

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: CEB

**Exploration Log
EB-1**

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269064 N:200612

EB-2

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Direct push rig

Percussion hammer

115.5'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Zack

Direct push

6/27/2017

NA

14.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)		
115		Backfilled with 3/8" bentonite chips	S1	EB-2-8 NWTPH-Gx, NWTPH-Dx, PAHs, PCBs, Priority Pollutant Metals, Pentachlorophenol	PID= 0.1	FILL	Dry, light brown, slightly silty SAND (SP-SM); trace fine gravel, fine to coarse sand, no sheen, no odor Becomes slightly moist, dark brown, fine to medium sand at 0.5 ft			
5	110		S2		PID= 5.0		Becomes dry and light brown with trace fine gravel and roots at 5.5 ft Becomes slightly moist and dark brown at 5.9 ft	5		
10	105		S3		PID= 2.8		Becomes dry and light brown with trace fine gravel at 10.2 ft Becomes very moist and dark brown at 11 ft	10		
15	100		6/27/2017		S4	PID= 0.0	HOLOCENE ALLUVIUM - Floodplain Deposits	Moist, light brown, sandy SILT (ML); trace roots and wood, no sheen, no odor	15	
20	95		S5		PID= 0.0	Becomes wet at 17.5 ft		20		
25	90		HOLOCENE ALLUVIUM - Channel Deposits		S6	PID= 0.0	Wet, dark gray to black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor			25
30	85				S7	PID= 0.0				30
35	80	Bottom of exploration at 35 ft. bgs.		Note: Grab groundwater sample EB-2-062717 collected				35		

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: CEB

**Exploration Log
EB-2**

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269070 N:200808

EB-3

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Direct push rig

Percussion hammer

115'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Zack

Direct push

6/27/2017

NA

14.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
5	110	Backfilled with 3/8" bentonite chips	S1	EB-3-7 NWTPH-Gx, NWTPH-Dx, PAHs, PCBs, Priority Pollutant Metals, Pentachlorophenol	PID= 0.0	FILL	Slightly moist, brown, slightly silty SAND (SP-SM); trace fine gravel, fine to medium sand, no sheen, no odor	5
			S2		PID= 0.0		Red brick and wood from 5.3 to 5.4 ft	
10	105		S3		PID= 0.0		Wet, gray, very silty SAND (SM); no sheen, no odor	10
			S4		PID= 0.0		Slightly moist, brown, slightly silty SAND (SP-SM); trace fine gravel, fine to medium sand, no sheen, no odor	
15	100	∇ 6/27/2017	S5		PID= 0.0		HOLOCENE ALLUVIUM - Floodplain Deposits Wet, gray, very sandy SILT (ML); trace coarse sand, fine sand, no sheen, no odor	15
			S6		PID= 0.0		Trace roots and wood at 15.5 ft	
20	95						HOLOCENE ALLUVIUM - Channel Deposits Very moist, dark gray, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	20
25	90							25
30	85							30
35	80						Bottom of exploration at 30 ft. bgs. Note: Grab groundwater sample EB-3-062717 collected	35

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

∇ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: CEB

**Exploration Log
EB-3**

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269276 N:200666

EB-4

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Direct push rig

Percussion hammer

112.5'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Zack

Direct push

6/27/2017

NA

13' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)	
110		Backfilled with 3/8" bentonite chips	S1	EB-4-3 NWTPH-Gx, NWTPH-Dx, PAHs, PCBs, Priority Pollutant Metals, Pentachlorophenol	PID= 0.0	[Material Type Symbol]	FILL Dry, brown, gravelly, slightly silty SAND (SP-SM); fine to coarse sand, fine gravel, no sheen, no odor	5	
5					PID= 0.0			Dry, gray, sandy SILT (ML); trace coarse sand, fine sand, no sheen, no odor Becomes slightly moist at 3 ft	5
105			S2			PID= 0.0	[Material Type Symbol]	Moist, dark gray to black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor Becomes very moist at 7 ft	10
10					PID= 0.0			HOLOCENE ALLUVIUM - Floodplain Deposits Very moist, gray, slightly sandy SILT (ML); trace roots and leaves, fine sand, no sheen, no odor	10
100		▽ 6/27/2017	S3			PID= 0.0	[Material Type Symbol]	HOLOCENE ALLUVIUM - Channel Deposits Wet, dark gray, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	15
15					PID= 0.0				15
95			S4			[Material Type Symbol]		20	
20								20	
90			S5		PID= 0.0	[Material Type Symbol]		25	
25								25	
85			S6		PID= 0.0	[Material Type Symbol]		30	
30								30	
80							Bottom of exploration at 30 ft. bgs. Note: Grab groundwater sample EB-4-062717 collected	35	
75								35	

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: CEB

**Exploration Log
EB-4**

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269281 N:200813

EB-5

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Direct push rig

Percussion hammer

113'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Zack

Direct push

6/28/2017

NA

10' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
110		Backfilled with 3/8" bentonite chips 6/28/2017	S1	EB-5-6 NWTPH-Gx, NWTPH-Dx, PAHs, PCBs, Priority Pollutant Metals, Pentachlorophenol	PID= 0.0	FILL	Dry, gray to brown, slightly silty SAND (SP-SM); trace fine gravel, fine to coarse sand, no sheen, no odor	5
105	S2		PID= 0.0		Slightly moist, gray, sandy SILT (ML); trace coarse sand, fine sand, no sheen, no odor			
100	S3		PID= 0.0		Slightly moist, dark gray to black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	10		
95	S4		PID= 0.0		Becomes wet at 10 ft			
90	S5		PID= 0.0		HOLOCENE ALLUVIUM - Floodplain Deposits Wet, brown, slightly sandy SILT (ML) interbedded with SAND (SP); trace roots and leaves, fine sand, no sheen, no odor	15		
85	S6		PID= 0.0		HOLOCENE ALLUVIUM - Channel Deposits Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor			
80							Bottom of exploration at 30 ft. bgs. Note: Grab groundwater sample EB-5-062817 collected	30
75								35

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: CEB

**Exploration Log
EB-5**

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269242 N:200664

AB-1

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

113'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/28/2017

NA

18' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
110		Backfilled with 3/8" bentonite chips	S1		PID= 0.0	FILL Dry, brown, slightly silty SAND (SP-SM); trace fine gravel, fine to coarse sand, no sheen, no odor	Trace coarse sand from 2 ft	
5					PID= 0.0			Slightly moist, brown, sandy SILT (ML); trace organics, red brown mottling, no sheen, no odor
105				S2		PID= 0.0	Slightly moist, dark gray to black, slightly silty SAND (SP-SM); trace silt nodules, fine to medium sand, no sheen, no odor	
10						PID= 0.0	HOLOCENE ALLUVIUM - Floodplain Deposits Slightly moist, brown, slightly sandy SILT (ML); trace organics, no sheen, no odor	
15				S3		PID= 0.0		
100					PID= 0.0	HOLOCENE ALLUVIUM - Channel Deposits Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor Wet, dark brown, silty SAND (SM); trace organics, fine to medium sand, no sheen, no odor Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor		
95	▽ 6/28/2017		S4		PID= 0.0			
20					PID= 0.0			20
90			S5		PID= 0.0			
25							Bottom of exploration at 25 ft. bgs.	25
85								

Legend

- No Soil Sample Recovery
- ▣ Continuous core 1.85" ID

Water Level

▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-1

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269185 N:200658

AB-2

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

114'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/28/2017

NA

10.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)			
110		Backfilled with 3/8" bentonite chips	S1		PID= 0.0	[Material Type: Dotted]	FILL Dry, light gray, slightly gravelly, slightly silty SAND (SP-SM); fine gravel, fine to coarse sand, no sheen, no odor				
105							S2	PID= 0.0	[Material Type: Dotted]	Slightly moist, brown, silty SAND (SM); trace silt nodules and coarse sand, fine to medium sand, no sheen, no odor	
100										S3	PID= 0.0
95							S4	PID= 0.0	[Material Type: Dotted]		
90										S5	PID= 0.0
85											
							HOLOCENE ALLUVIUM - Floodplain Deposits Very moist, dark gray, sandy SILT (ML); fine sand, no sheen, no odor Becomes moist, gray to brown at 11.5 ft				
							Black oxidized wood at 14.5 ft				
							HOLOCENE ALLUVIUM - Channel Deposits Wet, dark gray to black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor				
							Bottom of exploration at 25 ft. bgs.				

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-2

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269133 N:200659

AB-3

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

115'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/28/2017

NA

15' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)	
5	110	Backfilled with 3/8" bentonite chips	S1		PID= 0.0	FILL	Dry, brown, slightly gravelly, slightly silty SAND (SP-SM); fine angular gravel, fine to coarse sand, no sheen, no odor Becomes slightly moist and gray with trace coarse sand and fine to medium sand at 0.5 ft Wood fragment at 1 ft	5	
			S2		PID= 0.0		Slightly moist, brown to red, silty SAND (SM); fine to medium sand, laminar-scale oxidation, no sheen, no odor		
					PID= 0.0		Moist, brown, slightly silty SAND (SP-SM); fine to medium sand, laminar-scale oxidation bands from 7.2 to 8.5 ft		
10	105			S3			PID= 0.0	Becomes black at 11 ft	10
								HOLOCENE ALLUVIUM - Floodplain Deposits	
15	100	▽ 6/28/2017	S4		PID= 0.0	Moist, brown, slightly sandy SILT (ML); trace organics, no sheen, no odor	Becomes wet at 15 ft	15	
							Becomes moist at 17.5 ft		
							Becomes wet at 18.5 ft		
20	95		S5		PID= 0.0	HOLOCENE ALLUVIUM - Channel Deposits	Wet, dark gray to black, slightly silty SAND (SP-SM); fine to medium sand, silt nodules from 20 to 21 ft., no sheen, no odor	20	
25	90						Bottom of exploration at 25 ft. bgs.	25	

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-3

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269078 N:200652

AB-4

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Direct push rig

Percussion hammer

115'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Zack

Direct push

6/28/2017

NA

11' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
5	110	Backfilled with 3/8" bentonite chips	S1		PID= 0.0	FILL	Slightly moist, gray, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	5
			S2		PID= 0.0			
10	105	▽ 6/28/2017	S3		PID= 0.0	HOLOCENE ALLUVIUM - Floodplain Deposits	Slightly moist, gray, slightly silty SILT (ML); trace organics, no sheen, no odor	10
			S4		PID= 0.0			
15	100		S5		PID= 0.0	HOLOCENE ALLUVIUM - Channel Deposits	Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	15
20	95				PID= 0.0			20
25	90						Bottom of exploration at 25 ft. bgs.	25

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-4

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269072 N:200693

AB-5

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Direct push rig

Percussion hammer

115'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Zack

Direct push

6/28/2017

NA

11' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
5	110	Backfilled with 3/8" bentonite chips	S1		PID= 0.0	FILL	Dry to slightly moist, gray, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	5
			S2		PID= 0.0		Moist, gray, sandy SILT (ML); no sheen, no odor	
					PID= 0.0		Slightly moist, gray to brown, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	
					PID= 0.0		Moist, gray, sandy SILT (ML); no sheen, no odor	
					PID= 0.0		Slightly moist, brown, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	
10	105	▽ 6/28/2017	S3		PID= 0.0	HOLOCENE ALLUVIUM - Floodplain Deposits	Slightly moist, gray to light brown, sandy SILT (ML); trace organics, no sheen, no odor	10
15	100		S4		PID= 0.1			15
20	95		S5		PID= 0.0	HOLOCENE ALLUVIUM - Channel Deposits	Wet, dark gray to black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	20
				PID= 0.0	Slightly moist, light brown, sandy SILT (ML); trace organics, no sheen, no odor			
				PID= 0.0	Wet, dark gray to black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor			
				PID= 0.0	Slightly moist, light brown, sandy SILT (ML); trace organics, no sheen, no odor			
25	90						Wet, dark gray to black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	25
							Bottom of exploration at 25 ft. bgs.	

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-5

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269125 N:200702

AB-6

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Direct push rig

Percussion hammer

115'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Zack

Direct push

6/28/2017

NA

16.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
5	110	Backfilled with 3/8" bentonite chips	S1		PID= 0.0	FILL	Dry, gray, gravelly, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	5
			S2		PID= 0.0		Becomes red brown at 5 ft Becomes dark gray at 6 ft Becomes black at 7 ft	
10	105		S3		PID= 0.0		Becomes dark gray at 10 ft	10
15	100		S4		PID= 0.0		HOLOCENE ALLUVIUM - Floodplain Deposits Slightly moist, gray, slightly sandy SILT (ML); trace organics, no sheen, no odor	15
20	95		S5		PID= 0.0		Wet, dark gray to black, silty SAND (SM); fine to medium sand, no sheen, no odor Wet, brown to gray, sandy SILT (ML); trace organics, no sheen, no odor	20
25	90				PID= 0.0	HOLOCENE ALLUVIUM - Channel Deposits Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	25	
							Bottom of exploration at 25 ft. bgs.	

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-6

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269080 N:200750

AB-7

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Direct push rig

Percussion hammer

115'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Zack

Direct push

6/28/2017

NA

21.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
5	110	Backfilled with 3/8" bentonite chips	S1		PID= 0.0	FILL	Dry, gray, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	5
			S2		PID= 0.0		Becomes moist at 5 ft	
			S3		PID= 0.0		Becomes dark gray at 6.3 ft	
10	105		S4		PID= 0.0		Becomes very moist at 10 ft	
			S5		PID= 0.0			
15	100					HOLOCENE ALLUVIUM - Floodplain Deposits	Moist, dark gray, sandy SILT (ML); fine sand, no sheen, no odor	
							Becomes brown at 12 ft	
20	95						HOLOCENE ALLUVIUM - Channel Deposits	Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor
25	90					Bottom of exploration at 25 ft. bgs.		25

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-7

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269153 N:200786

AB-8

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Direct push rig

Percussion hammer

114.5'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

21' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)	
5	110	Backfilled with 3/8" bentonite chips	S1		PID= 0.0	FILL	Slightly moist, dark brown, slightly silty SAND (SP-SM); fine to coarse sand, no sheen, no odor		
					PID= 0.0		Slightly moist, brown, sandy SILT (ML); trace coarse sand and fine gravel, fine sand, no sheen, no odor		
5			S2		PID= 0.0	FILL	Dry, brown, gravelly, slightly silty SAND (SP-SM); fine to coarse sand, fine gravel, no sheen, no odor	5	
					PID= 0.0		Slightly moist, gray to brown, slightly sandy SILT (ML); trace coarse sand, no sheen, no odor		
10	105		S3		PID= 0.0	FILL	Very moist, black, slightly silty SAND (SP-SM) interbedded with sandy SILT (ML) from 8 to 8.5 ft; fine to medium sand, no sheen, no odor		
15	100	6/29/2017	S4		PID= 0.0	HOLOCENE ALLUVIUM - Floodplain Deposits	Very moist, dark brown, sandy SILT (ML); trace organics, no sheen, no odor		
								Becomes light brown at 15 ft	15
20	95		S5		PID= 0.0		HOLOCENE ALLUVIUM - Channel Deposits	Becomes wet at 21 ft	20
						Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor			
25	90						Bottom of exploration at 25 ft. bgs.	25	
85									

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-8

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269301 N:200746

AB-9

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Direct push rig

Percussion hammer

112.5'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

7.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)				
110		Backfilled with 3/8" bentonite chips	S1		PID= 0.0		FILL Dry, brown, slightly silty SAND (SP-SM); trace fine and coarse gravel, no sheen, no odor	5				
5												Slightly moist, blue gray, sandy SILT (ML); trace very stiff silt nodules, no sheen, no odor
105	▽ 6/29/2017											Moist, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor
10												Becomes wet at 7.5 ft
100									S2			
15			S3				HOLOCENE ALLUVIUM - Floodplain Deposits Wet, brown, slightly sandy SILT (ML); trace organics, fine sand, no sheen, no odor Becomes slightly moist at 13 ft	15				
95			S4				HOLOCENE ALLUVIUM - Channel Deposits Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	20				
20			S5					25				
90												
25							Bottom of exploration at 25 ft. bgs.					
85												

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-9

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269179 N:200629

AB-10

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

114.5'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

10.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)	
5	110	Backfilled with 3/8" bentonite chips	S1		PID= 0	FILL	Dry, brown, slightly silty SAND (SP-SM); trace coarse gravel, fine to coarse sand, no sheen, no odor	5	
					PID= 0		Dry, gray to brown, slightly silty SAND (SP-SM); trace coarse sand and organics, no sheen, no odor		
							Becomes slightly moist at 3 ft		
				S2			PID= 0.1		
							PID= 0		
10	105	▽ 6/29/2017			PID= 0		Becomes wet at 10.5 ft	10	
15	100		S3		PID= 0		HOLOCENE ALLUVIUM - Floodplain Deposits Slightly moist, brown, slightly sandy SILT (ML); trace organics, no sheen, no odor	15	
20	95		S4		PID= 0		HOLOCENE ALLUVIUM - Channel Deposits Moist, dark gray to black, silty SAND (SM); fine to medium sand, no sheen, no odor	20	
25	90		S5		PID= 0			25	
							Bottom of exploration at 25 ft. bgs.		

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-10

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269151 N:200612

AB-11

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

115'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

10' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
						Concrete		
					PID= 0.0	FILL	Slightly moist, gray to brown, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	
5	110	Backfilled with 3/8" bentonite chips	S1					5
					PID= 0.0			
			S2					
10	105	6/29/2017					Becomes wet and gray at 10 ft	10
					PID= 0.0			
			S3					
15	100						HOLOCENE ALLUVIUM - Floodplain Deposits Slightly moist, brown, sandy SILT (ML); trace organics, no sheen, no odor	15
					PID= 0.0		Wood debris from 15.5 ft to 15.6 ft	
					PID= 0.0		HOLOCENE ALLUVIUM - Channel Deposits Wet, dark gray, silty SAND (SM); fine to medium sand, no sheen, no odor	
20	95		S4				Becomes black at 20 ft	20
					PID= 0.0			
			S5					
25	90						Bottom of exploration at 25 ft. bgs.	25

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log
AB-11

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E: 1269248 N: 200627

AB-12

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

113'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

7.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)						
110		Backfilled with 3/8" bentonite chips	S1		PID= 0.0	[Material Type: Slightly moist, brown, gravelly, slightly silty SAND (SP-SM); fine to coarse sand, no sheen, no odor]	FILL	5						
5														
105		6/29/2017	S2		PID= 0.0	[Material Type: Slightly moist, gray, slightly sandy SILT (ML); no sheen, no odor]	Becomes sandy SILT (ML) from 5.5 ft to 6.0 ft	5						
10														
100			S3		PID= 0.0	[Material Type: Moist, black, slightly silty SAND (SP-SM); trace coarse sand, fine to medium sand, no sheen, no odor]	HOLOCENE ALLUVIUM - Floodplain Deposits	15						
15														
95			S4		PID= 0.0	[Material Type: Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor]	HOLOCENE ALLUVIUM - Channel Deposits	20						
20														
90			S5		PID= 0.0	[Material Type: Bottom of exploration at 25 ft. bgs.]		25						
25														
85														

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log
AB-12

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269290 N:200680

AB-13

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

112.5'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

10' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)	
110		Backfilled with 3/8" bentonite chips	S1		PID= 0.0	[Material Type Symbol]	FILL Slightly moist, brown, gravelly, slightly silty SAND (SP-SM); fine to coarse angular gravel, fine to coarse sand, no sheen, no odor		
5							PID= 0.0	Slightly moist, gray, sandy SILT (ML); fine sand, no sheen, no odor	5
105		6/30/2017	S2		PID= 0.0	[Material Type Symbol]	Slightly moist, black, slightly silty SAND (SP-SM); fine sand, no sheen, no odor		
10							PID= 0.0	Very moist to wet, light brown, sandy SILT (ML); fine sand, no sheen, no odor	10
100		HOLOCENE ALLUVIUM - Floodplain Deposits	S3		PID= 0.0	[Material Type Symbol]	Moist, brown, slightly sandy SILT (ML); trace organics, fine sand, no sheen, no odor		
15							PID= 0.0		15
95							PID= 0.0		
20		HOLOCENE ALLUVIUM - Channel Deposits	S5		PID= 0.0	[Material Type Symbol]	Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	20	
90									
25		Bottom of exploration at 25 ft. bgs.							25
85									

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-13

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E: 1269294 N: 200785

AB-14

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

113'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

10' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
110		Backfilled with 3/8" bentonite chips	S1		PID= 0.0	[Material Type: Dotted]	FILL Slightly moist, brown, gravelly, slightly silty SAND (SP-SM); fine to coarse gravel, fine to coarse sand, no sheen, no odor	5
5							PID= 0.0 Slightly moist, gray, sandy SILT (ML); trace gravel and coarse sand, fine sand, no sheen, no odor	
105		6/30/2017	S2		PID= 0.0	[Material Type: Dotted]	Moist, black, slightly silty SAND (SP-SM); fine to medium sand, no odor, no sheen	10
10							Silt lamination from 7.3 ft to 7.5 ft Becomes wet at 10 ft	
100			S3		PID= 0.0	[Material Type: Dotted]	HOLOCENE ALLUVIUM - Floodplain Deposits Moist, brown, sandy SILT (ML); trace organics, fine sand, no sheen, no odor Becomes slightly moist at 13 ft	15
15								
95			S4		PID= 0.0	[Material Type: Dotted]	HOLOCENE ALLUVIUM - Channel Deposits Wet, dark gray to black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	20
20								
90			S5		PID= 0.0	[Material Type: Dotted]		25
25							Bottom of exploration at 25 ft. bgs.	
85								

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log
AB-14

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269220 N:200795

AB-15

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

113.5'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

11' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
5	110	Backfilled with 3/8" bentonite chips	S1		PID= 0.0		FILL Dry to slightly moist, brown, gravelly, slightly silty SAND (SP-SM); fine to coarse gravel, fine to coarse sand, no sheen, no odor	5
10	105	▽ 6/30/2017	S2		PID= 0.0		Slightly moist, gray, sandy SILT (ML); trace coarse sand, fine sand, no sheen, no odor	10
15	100		S3		PID= 0.0		Slightly moist, gray to black, slightly silty SAND (SP-SM); fine to medium sand, trace silt nodules, no sheen, no odor	15
20	95		S4		PID= 0.0		Very moist to wet, black, silty SAND (SM); fine to medium sand, no sheen, no odor	20
25	90		S5		PID= 0.0		HOLOCENE ALLUVIUM - Floodplain Deposits Moist, brown, sandy SILT (ML); trace organics, no sheen, slight sulfur-like odor near organics	25
							Wet, dark gray to black, silty SAND (SM); fine to medium sand, no sheen, no odor	
							Slightly moist, brown, sandy SILT (ML); trace organics, fine sand, no sheen, no odor	
							HOLOCENE ALLUVIUM - Channel Deposits Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	
							Bottom of exploration at 25 ft. bgs.	

Legend

- No Soil Sample Recovery
- ▣ Continuous core 1.85" ID

Water Level

▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-15

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E: 1269236 N: 200738

AB-16

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

113.5'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

10' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
5	110	Backfilled with 3/8" bentonite chips	S1		PID= 0.0		FILL Slightly moist, gray, sandy SILT (ML); trace coarse sand, fine sand, no sheen, no odor	5
10	105	6/30/2017	S2		PID= 0.0		Slightly moist, black, silty SAND (SM); fine to medium sand, no sheen, no odor	10
15	100		S3		PID= 0.0		HOLOCENE ALLUVIUM - Floodplain Deposits Slightly moist to moist, brown, sandy SILT (ML); fine sand, no sheen, no odor Becomes red brown with trace organics at 12 ft	15
20	95		S4		PID= 0.0		Wood debris at 15.5 ft	20
25	90		S5		PID= 0.0		HOLOCENE ALLUVIUM - Channel Deposits Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	25
	85						Bottom of exploration at 25 ft. bgs.	

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-16

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269175 N:200753

AB-17

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

113.5'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

10' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
110		Backfilled with 3/8" bentonite chips	S1		PID= 0.0	[Material Type: Slightly moist, gray, slightly silty SAND (SP-SM); trace coarse sand, fine to medium sand, no sheen, no odor]	FILL	5
5								
105		6/30/2017	S2		PID= 0.0	[Material Type: Slightly moist, gray, sandy SILT (ML); trace coarse sand and fine gravel, fine sand, no sheen, no odor]	HOLOCENE ALLUVIUM - Floodplain Deposits	5
10								
100			S3		PID= 0.0	[Material Type: Moist, black, slightly silty SAND (SP-SM); trace coarse gravel, fine to medium sand, no sheen, no odor]	HOLOCENE ALLUVIUM - Floodplain Deposits	10
15								
95			S4		PID= 0.0	[Material Type: Slightly moist, brown, sandy SILT (ML); fine sand, no sheen, no odor]	HOLOCENE ALLUVIUM - Channel Deposits	15
20								
90					PID= 0.0	[Material Type: Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor]	HOLOCENE ALLUVIUM - Channel Deposits	20
25								
85								

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log
AB-17

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269233 N:200708

AB-18

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

114'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

10' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
5		Backfilled with 3/8" bentonite chips	S1		PID= 0.0		FILL Slightly moist, brown to gray, slightly silty SAND (SP-SM); trace fine gravel, fine to coarse sand, no sheen, no odor	5
10		6/30/2017	S2		PID= 0.0		Slightly moist, gray, sandy SILT (ML); trace coarse sand, fine sand, no sheen, no odor	10
15			S3		PID= 0.0		Moist, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	15
20			S4		PID= 0.0		Becomes wet at 10 ft HOLOCENE ALLUVIUM - Floodplain Deposits Slightly moist, brown, sandy SILT (ML); fine sand, no sheen, no odor	20
25			S5		PID= 0.0		Becomes red brown with trace organics at 12.8 ft HOLOCENE ALLUVIUM - Channel Deposits Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor	25
25							Bottom of exploration at 25 ft. bgs.	25

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log
AB-18

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269122 N:200747

AB-19

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

114.5'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

10' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
5	110	Backfilled with 3/8" bentonite chips	S1		PID= 0.0		FILL Dry, gray slightly silty SAND (SP-SM); trace coarse sand, fine to medium sand, no sheen, no odor Becomes brown at 1.5 ft	5
10	105	∇ 6/30/2017	S2		PID= 0.0		Becomes gray to black at 6.6 ft	10
15	100		S3		PID= 0.0		Becomes wet at 10 ft	15
20	95		S4		PID= 0.0		HOLOCENE ALLUVIUM - Floodplain Deposits Slightly moist, brown, sandy SILT (ML); trace organics, fine sand, no odor, no sheen	20
25	90		S5		PID= 0.0		HOLOCENE ALLUVIUM - Channel Deposits Wet, black, slightly silty SAND (SP-SM); fine to medium sand, no odor, no sheen	25
25	85						Bottom of exploration at 25 ft. bgs.	25

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

∇ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log
AB-19

Sheet 1 of 1



West Duwamish CSO - 150218

Environmental Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269127 N:200816

AB-20

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KC Metro)

Holocene

Direct push rig

Percussion hammer

115'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KC Metro)

Depth to Water (Below GS)

Zack

Direct push

6/29/2017

NA

10' (ATD)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
5	110	Backfilled with 3/8" bentonite chips 6/30/2017	S1		PID= 0.0		<p>FILL Slightly moist, brown, slightly silty SAND (SP-SM); trace fine gravel, fine to coarse sand, no sheen, no odor</p> <p>Becomes gray with fine to medium sand at 0.7 ft Silty sand interbeds from 2.5 ft to 3.0 ft</p> <p>Becomes red brown at 5 ft</p>	5
			S2		PID= 0.0		<p>Wet, gray, slightly sandy SILT (ML); fine sand, no sheen, no odor</p> <p>Becomes red brown from 6.2 ft to 6.4 ft</p>	
10	105		S3		PID= 0.0		<p>Moist, dark brown to dark gray, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor</p> <p>Becomes wet, dark gray at 10 ft</p>	10
15	100		S4		PID= 0.0		<p>HOLOCENE ALLUVIUM - Floodplain Deposits Slightly moist to moist, gray, sandy SILT (ML); fine sand, no sheen, no odor</p> <p>Becomes brown with trace organics at 13.4 ft</p>	15
20	95		S5		PID= 0.0		<p>HOLOCENE ALLUVIUM - Channel Deposits Wet, dark gray to black, slightly silty SAND (SP-SM); fine to medium sand, no sheen, no odor</p>	20
25	90						Bottom of exploration at 25 ft. bgs.	25

Legend

- No Soil Sample Recovery
- Continuous core 1.85" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ENK
Approved by: DHM

Exploration Log AB-20

Sheet 1 of 1



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269100 N:200820

B-4

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM Datum)

Holocene Drilling

BK-81

Autohammer; 140 lb hammer; 30" drop

115'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Jared

Hollow Stem Auger

5/10/2018

NA

10.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
		Borehole backfilled with bentonite chips.											
			S-1						4		FILL SILTY SAND WITH GRAVEL (SM); Loose, slightly moist, gray-brown; fine to coarse sand; fine to coarse subrounded to rounded gravel.		
			S-2						4		SAND WITH SILT (SP-SM); Loose, slightly moist, gray-brown; fine to medium sand.		
			S-2						4				
5	110		S-2						3		SILTY SAND (SM); Loose, slightly moist, gray-brown; fine to medium sand; with iron-oxide staining.	5	
			S-2						2		Becomes moist		
			S-2						3				
			S-3						3		SAND WITH SILT (SP-SM); Medium dense, moist, gray-brown; fine to medium sand		
			S-3						6				
			S-3						5				
10	105	5/10/2018	S-4						3		SILTY SAND (SM); Very loose, wet, dark gray; fine to medium sand.	10	
			S-4						2				
			S-4						2				
			S-5						0	OC=5%	HOLOCENE ALLUVIUM - Floodplain Deposits ORGANIC SILT (OL); Very soft, moist, gray; low plasticity; contains thin interbeds of silty SAND (SM); abundant organics.		
			S-5						0				
			S-5						0				
			S-6						0	OC=10%	Becomes soft		
			S-6						1				
			S-6						2				
			ST-1						0	OC=4%			
			ST-1						0				
			S-7						0		No recovery		
			S-7						0				
			S-7						0				

Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)
- Thin wall 2" (Shelby)

Plastic Limit | Liquid Limit

Water Level

▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log B-4



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269100 N:200820

B-4

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM Datum)

Holocene Drilling

BK-81

Autohammer; 140 lb hammer; 30" drop

115'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Jared

Hollow Stem Auger

5/10/2018

NA

10.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
			S-7									HOLOCENE ALLUVIUM - Floodplain Deposits ORGANIC SILT (OL); Very soft, moist, gray; low plasticity; contains thin interbeds of silty SAND (SM); abundant organics. (continued)	
			S-8						0			HOLOCENE ALLUVIUM - Channel Deposits SAND WITH SILT (SP-SM); Very loose, wet, dark gray; fine to medium sand; trace organics.	
25	90		S-9						1			Becomes loose	25
			S-10						3				
			S-11						4				
30	85								1				
									3				
									6				
									2				
									3				
									5				
												Bottom of exploration at 31.5 ft. bgs.	
35	80												35

Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)
- Thin wall 2" (Shelby)

Plastic Limit ——— Liquid Limit

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log B-4

Sheet 2 of 2



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269300 N:200810

B-5

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM Datum)

Holocene Drilling

BK-81

Autohammer; 140 lb hammer; 30" drop

113'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Jared

Hollow Stem Auger

5/10/2018

NA

7.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
		Borehole backfilled with bentonite chips.											
110			S-1						3		FILL SILT WITH SAND (ML); Soft, moist, gray-brown; low plasticity; fine to coarse sand.		
									2				
									2		Becomes blue-gray; contains fine to medium sand and trace organics.		
5			S-2						1				
									3				
									5				
											SAND WITH SILT (SP-SM); Loose, moist, dark gray; fine to medium sand.		
											Becomes very loose, wet		
105		▽ 5/10/2018	S-3						1				
									1				
									1		SILTY SAND (SM); Very loose, wet, dark gray; fine to medium sand; trace organics.		
10			S-4						1				
									0				
									1		Contains thin interbeds of SILT (ML)		
100			S-5						1				
									1				
									1		HOLOCENE ALLUVIUM - Floodplain Deposits ORGANIC SILT (OL); Very soft, slightly moist, gray-brown; low plasticity; abundant organics.		
15			ST-1										
									1				
									0				
									1				
95			S-6										
											SILTY SAND (SM); Very loose, wet, dark gray; fine to medium sand; abundant organics; interbedded with SILT (ML).		
											HOLOCENE ALLUVIUM - Channel Deposits SAND WITH SILT (SP-SM); Very loose, wet, dark gray; fine to medium sand; trace organics.		

Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)
- Thin wall 2" (Shelby)

Plastic Limit |-----| Liquid Limit

Water Level

▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log B-5

Sheet 1 of 2



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269300 N:200810

B-5

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM Datum)

Holocene Drilling

BK-81

Autohammer; 140 lb hammer; 30" drop

113'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Jared

Hollow Stem Auger

5/10/2018

NA

7.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
			S-7						2		HOLOCENE ALLUVIUM - Channel Deposits SAND WITH SILT (SP-SM); Very loose, wet, dark gray; fine to medium sand; trace organics. (continued) Becomes medium dense		
									5				
									8				
90			S-8						3		Becomes loose		
									5				
25			S-9						4				
									6				
									4				
85			S-10						3		Becomes medium dense		
									8				
									10				
30			S-11						2				
									8				
									12				
80											Bottom of exploration at 31.5 ft. bgs.		
35													
75													

Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)
- Thin wall 2" (Shelby)

Plastic Limit ——— Liquid Limit

Water Level Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log B-5



West Duwamish CSO - 150218

Project Address & Site Specific Location

101 SW Michigan St., Seattle, WA, 98106

Geotechnical Exploration Log

Coordinates (SPN NAD83 ft)

E:1269180 N:200706

Exploration Number

MW-1

Ecology Well Tag No. BKL 611

Depth to Water (Below GS)

12.52' (Static)

Contractor

Holocene

Operator

Jared

Equipment

Rotary drill rig

Exploration Method(s)

Mud rotary

Sampling Method

Autohammer; 140 lb hammer; 30" drop

Work Start/Completion Dates

6/27/2017 to 6/28/2017

Ground Surface (GS) Elev. (KCM Datum)

114.42'

Top of Casing Elev. (KCM Datum)

NA

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
85		3/8" hydrated bentonite chips											
85		Threaded cap											
85		2" Sch40 PVC pre-pack screen 0.020" slot											
85		10/20 sand											
90		6/30/2017 5/31/2018 7/2/2018 6/15/2018											
95		3/8" hydrated bentonite chips											
100		Flush-mount monument in concrete Compression plug											
105		3/8" hydrated bentonite chips											
110													

Legend

- No Soil Sample Recovery
- ▣ Split Barrel 2" X 1.375" (SPT)
- ▣ Thin wall 2" (Shelby)

Plastic Limit ——— Liquid Limit

▼ Static Water Level

Water Level

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-1

Sheet 1 of 7



West Duwamish CSO - 150218

Project Address & Site Specific Location

101 SW Michigan St., Seattle, WA, 98106

Geotechnical Exploration Log

Coordinates (SPN NAD83 ft)

E:1269180 N:200706

Exploration Number

MW-1

Ecology Well Tag No. BKL 611

Contractor

Holocene

Operator

Jared

Equipment

Rotary drill rig

Exploration Method(s)

Mud rotary

Sampling Method

Autohammer; 140 lb hammer; 30" drop

Work Start/Completion Dates

6/27/2017 to 6/28/2017

Ground Surface (GS) Elev. (KCM Datum)

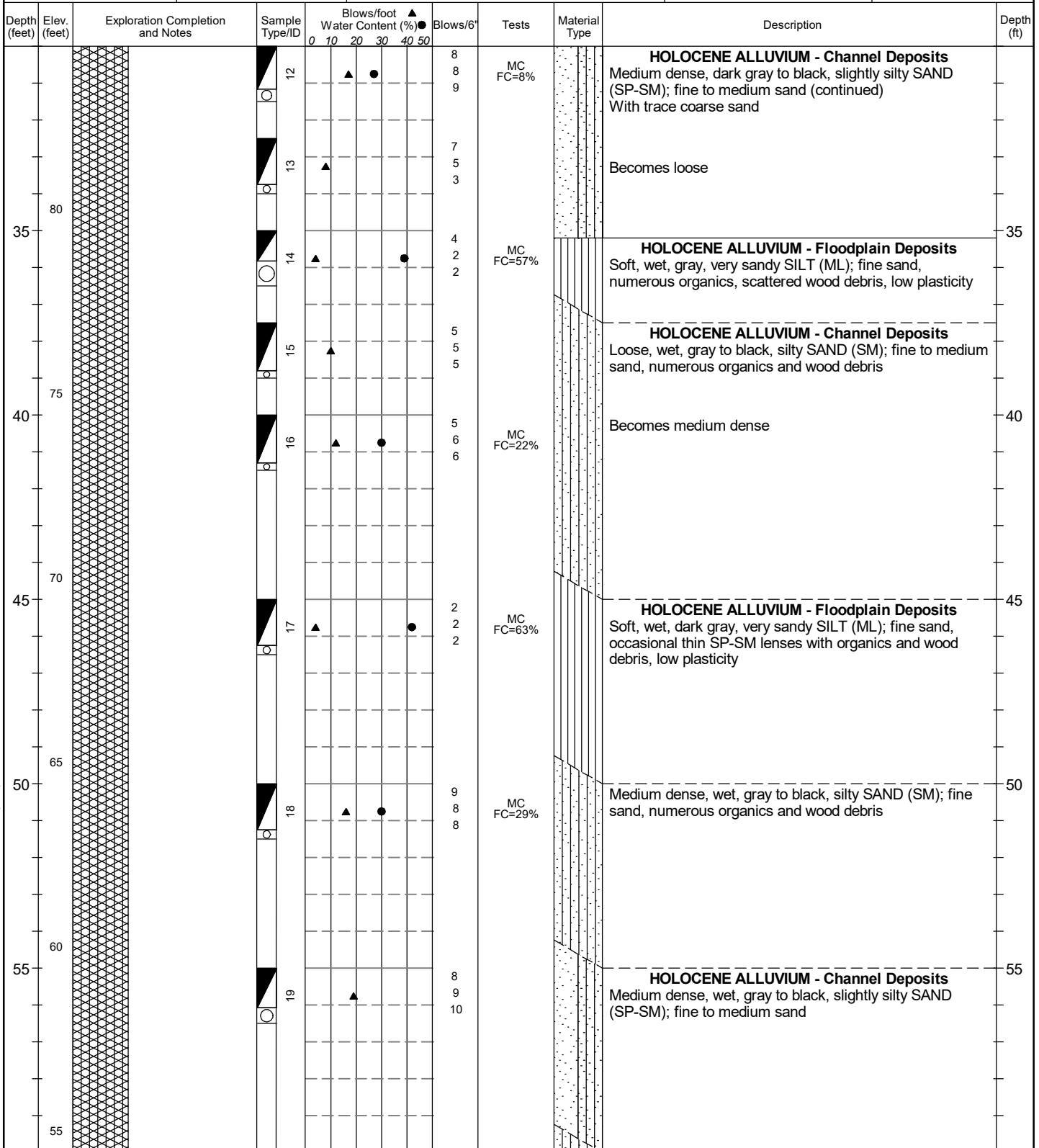
114.42'

Top of Casing Elev. (KCM Datum)

NA

Depth to Water (Below GS)

12.52' (Static)



Legend

- No Soil Sample Recovery
- ▣ Split Barrel 2" X 1.375" (SPT)
- ▣ Thin wall 2" (Shelby)

Plastic Limit ——— Liquid Limit

- ▼ Static Water Level

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-1

Sheet 2 of 7



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269180 N:200706

MW-1

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Rotary drill rig

Autohammer; 140 lb hammer; 30" drop

114.42'

Ecology Well Tag No. BKL 611

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Jared

Mud rotary

6/27/2017 to 6/28/2017

NA

12.52' (Static)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
50			20			▲	●		9		HOLOCENE ALLUVIUM - Floodplain Deposits Medium dense, wet, gray to black, silty SAND (SM); fine sand, numerous organics and wood debris		
65									9	MC FC=25%		Becomes very silty	65
70			21			▲			4				
75									5				
80			22			▲	●		3		With occasional thin silt lenses		
85									4	MC FC=45%			70
90			23			▲			8				
95									7				
100			24			▲	●		8				
105									8	MC FC=50%			
110			25			▲			8				
115									8				
120									10				
125									11				
130									4				
135									5				
140									11				

Legend

- No Soil Sample Recovery
- ▣ Split Barrel 2" X 1.375" (SPT)
- ▣ Thin wall 2" (Shelby)

Plastic Limit ——— Liquid Limit

▼ Static Water Level

Water Level

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-1

Sheet 3 of 7



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269180 N:200706

MW-1

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Rotary drill rig

Autohammer; 140 lb hammer; 30" drop

114.42'

Ecology Well Tag No. BKL 611

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Jared

Mud rotary

6/27/2017 to 6/28/2017

NA

12.52' (Static)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
95	20		26						6 4 7		HOLOCENE ALLUVIUM - Floodplain Deposits Medium dense, wet, gray to black, silty SAND (SM); fine sand, numerous organics and wood debris (continued)	95	
95			27						3 6 12		Medium stiff, wet, dark gray, slightly sandy SILT (ML); fine sand, low plasticity Medium dense, wet, dark gray, silty SAND (SM); fine sand	95	
100	15		28						10 13 15	MC FC=19%		100	
105	10		29						14 14 16			105	
110	5		30						10 14 17		Becomes dense	110	
115	0		31						6 13 22			115	

Legend

- No Soil Sample Recovery
- ▣ Split Barrel 2" X 1.375" (SPT)
- ▣ Thin wall 2" (Shelby)

Plastic Limit |-----| Liquid Limit

▼ Static Water Level

Water Level

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-1

Sheet 4 of 7



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269180 N:200706

MW-1

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Rotary drill rig

Autohammer; 140 lb hammer; 30" drop

114.42'

Ecology Well Tag No. BKL 611

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Jared

Mud rotary

6/27/2017 to 6/28/2017

NA

12.52' (Static)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
			32						11		Medium dense, wet, dark gray, silty SAND (SM); fine sand (continued)		
									13				
									11		Very stiff, very moist, dark gray, slightly sandy SILT (ML); fine sand, non-plastic		
			33						5				
									10				
									17		Medium dense, wet, dark gray, silty SAND (SM); fine to medium sand		
			34						0	MC	MARINE DEPOSITS Very soft, very moist to wet, dark gray, SILT (ML); trace fine sand, low plasticity		
									0				
									0				
									0				
			35						0		With trace seashells Becomes stiff		
									5				
									4				
			36						0		Becomes very soft		
									0				
									0				
									0				
			37						0		With numerous seashells		
									0				
									0				

Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)
- Thin wall 2" (Shelby)

Plastic Limit |-----| Liquid Limit

Static Water Level

Water Level

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-1

Sheet 5 of 7



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269180 N:200706

MW-1

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Rotary drill rig

Autohammer; 140 lb hammer; 30" drop

114.42'

Ecology Well Tag No. BKL 611

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

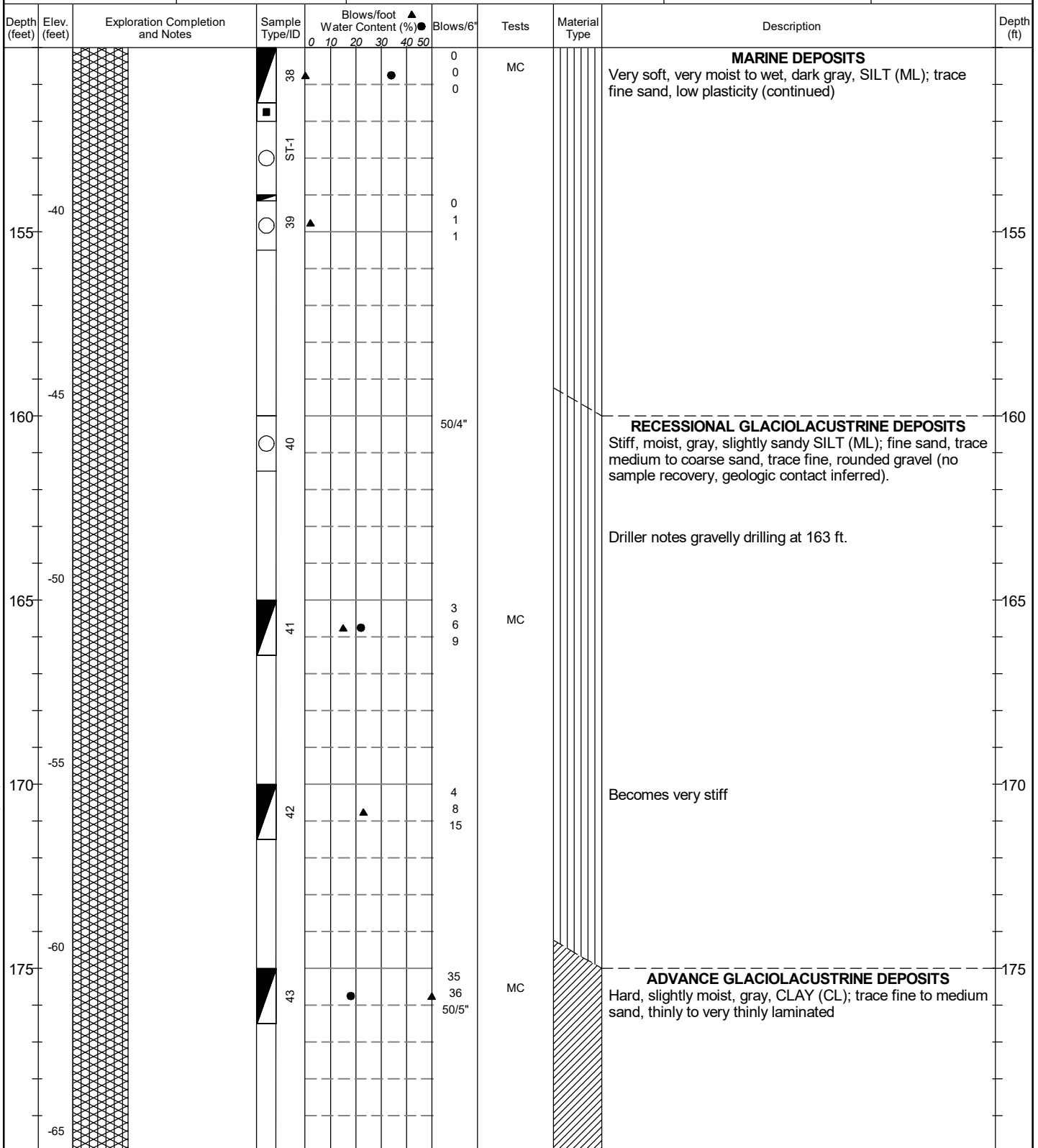
Jared

Mud rotary

6/27/2017 to 6/28/2017

NA

12.52' (Static)



Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)
- ▣ Thin wall 2" (Shelby)

Plastic Limit |-----| Liquid Limit

▼ Static Water Level

Water Level

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-1

Sheet 6 of 7



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

101 SW Michigan St., Seattle, WA, 98106

E:1269180 N:200706

MW-1

Contractor

Equipment

Sampling Method

Ground Surface (GS) Elev. (KCM Datum)

Holocene

Rotary drill rig

Autohammer; 140 lb hammer; 30" drop

114.42'

Ecology Well Tag No. BKL 611

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

Jared

Mud rotary

6/27/2017 to 6/28/2017

NA

12.52' (Static)

Depth (feet)	Elev. (feet)	Exploration Completion and Notes	Sample Type/ID	Blows/foot						Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40	50					
			44							36 50/4"			ADVANCE GLACIOLACUSTRINE DEPOSITS Hard, slightly moist, gray, CLAY (CL); trace fine to medium sand, thinly to very thinly laminated (continued)	
			45							50 50/3.5"				
			46							32 50/5"				
			47							37 50/3.5"				
			48							40 50/3"				
													Bottom of exploration at 200.75 ft. bgs.	

OLD STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\KCC WEST DUWAMISH CSO (2017) - 150218.GPJ December 8, 2022

Legend

- No Soil Sample Recovery
- ▣ Split Barrel 2" X 1.375" (SPT)
- ▣ Thin wall 2" (Shelby)

Plastic Limit |-----| Liquid Limit

▼ Static Water Level

Water Level

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-1



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269300 N:200780

MW-2

Contractor
Holocene Drilling

Equipment
BK-81

Sampling Method
Autohammer; 140 lb hammer; 30" drop

Ground Surface Elev. (KCM Datum)
113.49'

Ecology Well Tag No.
BKZ 521

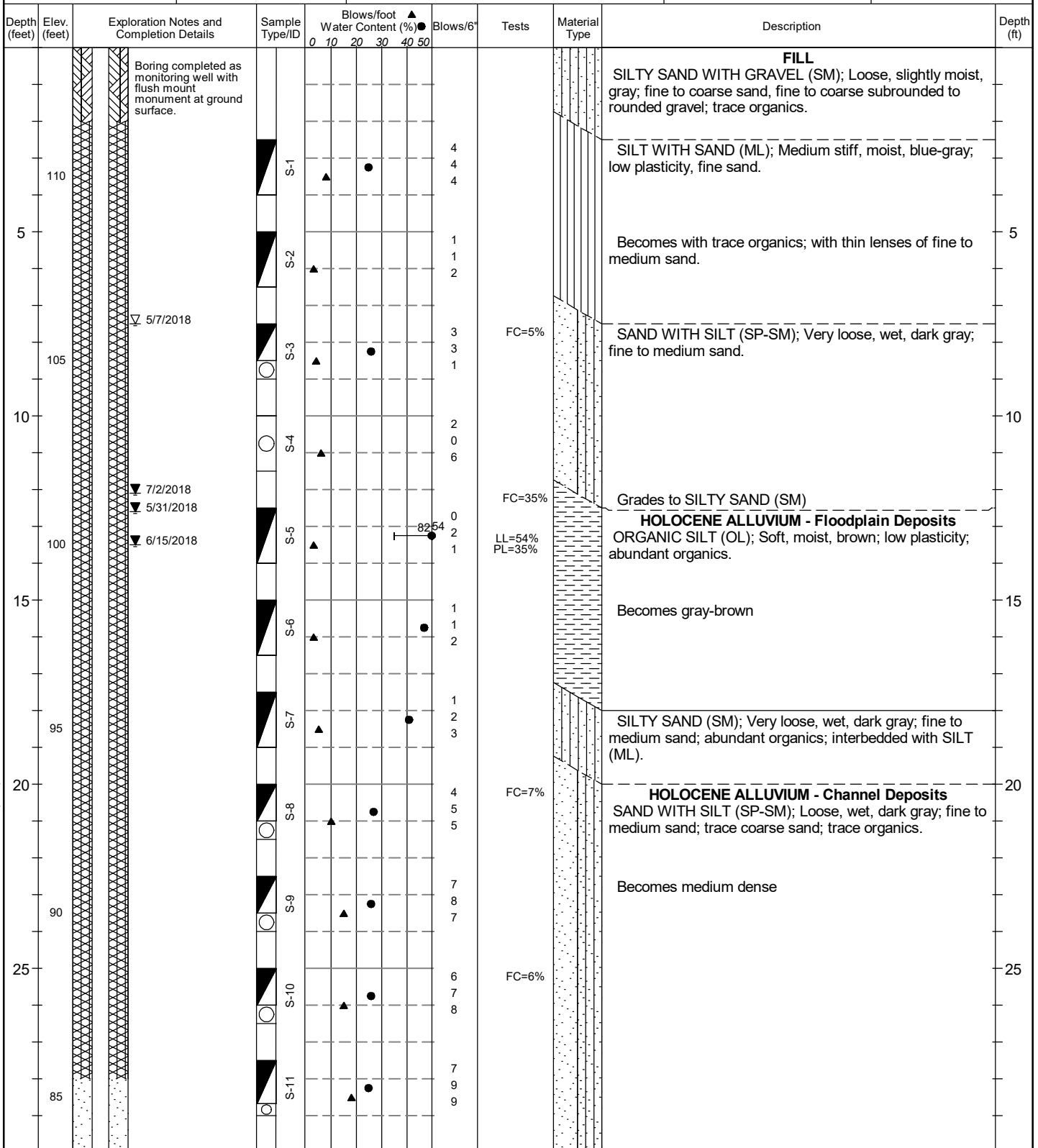
Operator
Jared

Exploration Method(s)
Mud rotary

Work Start/Completion Dates
5/7/2018 to 5/8/2018

Top of Casing Elev. (KCM Datum)
112.5'

Depth to Water (Below GS)
7.5' (ATD)



Legend

- No Soil Sample Recovery
- ◼ Split Barrel 2" X 1.375" (SPT)

Plastic Limit | Liquid Limit

- ▼ Static Water Level
- ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-2



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269300 N:200780

MW-2

Contractor
Holocene Drilling

Equipment
BK-81

Sampling Method
Autohammer; 140 lb hammer; 30" drop

Ground Surface Elev. (KCM Datum)
113.49'

Ecology Well Tag No.
BKZ 521

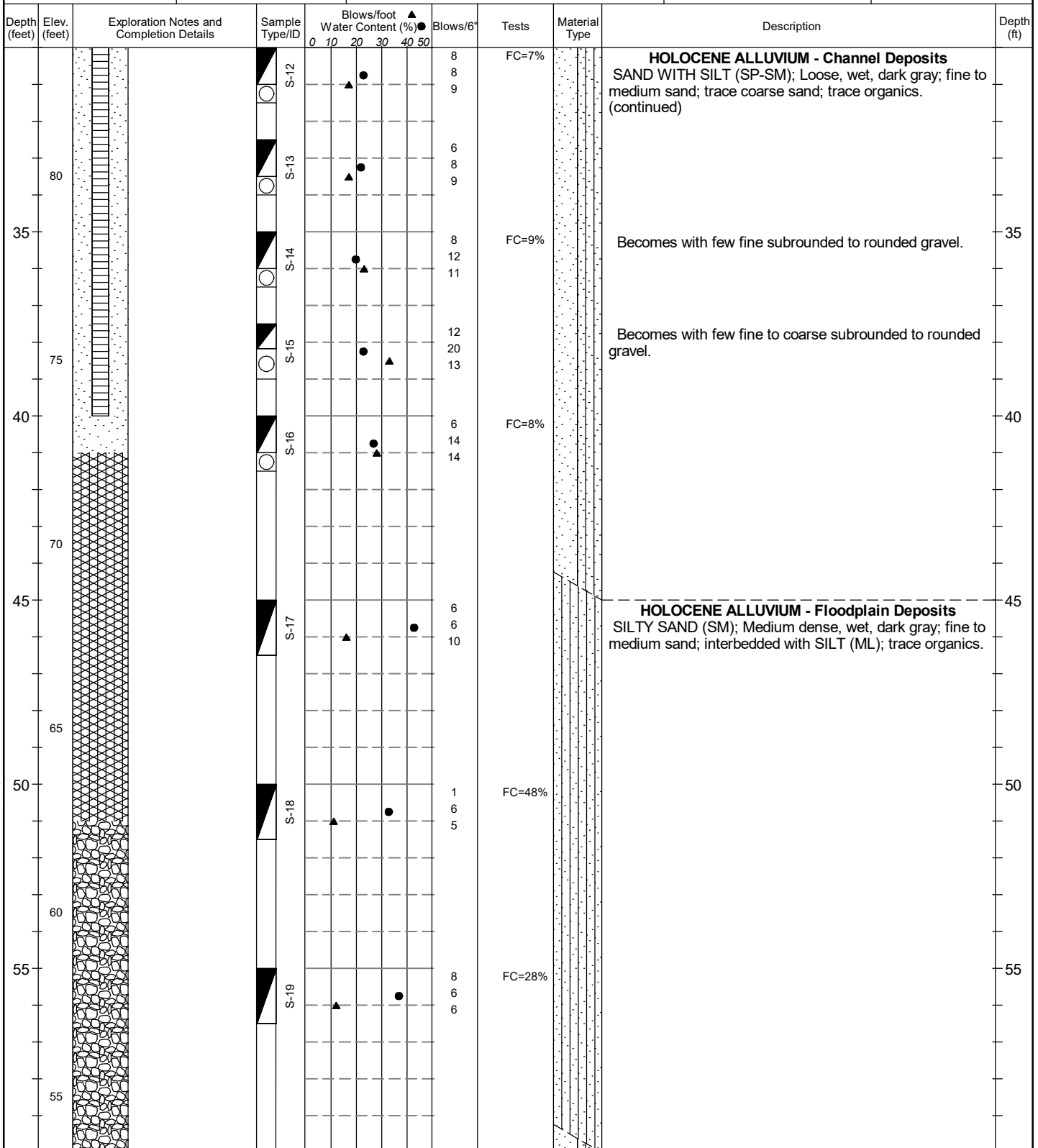
Operator
Jared

Exploration Method(s)
Mud rotary

Work Start/Completion Dates
5/7/2018 to 5/8/2018

Top of Casing Elev. (KCM Datum)
112.5'

Depth to Water (Below GS)
7.5' (ATD)



NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\KSC WEST DUWAMISH CSO (2018) - 150218.GPJ December 8, 2022

Legend

- ☐ No Soil Sample Recovery
- ▣ Split Barrel 2" X 1.375" (SPT)

Plastic Limit |-----| Liquid Limit

- ▼ Static Water Level
- ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log
MW-2



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269300 N:200780

MW-2

Contractor
Holocene Drilling

Equipment
BK-81

Sampling Method
Autohammer; 140 lb hammer; 30" drop

Ground Surface Elev. (KCM Datum)
113.49'

Ecology Well Tag No.
BKZ 521

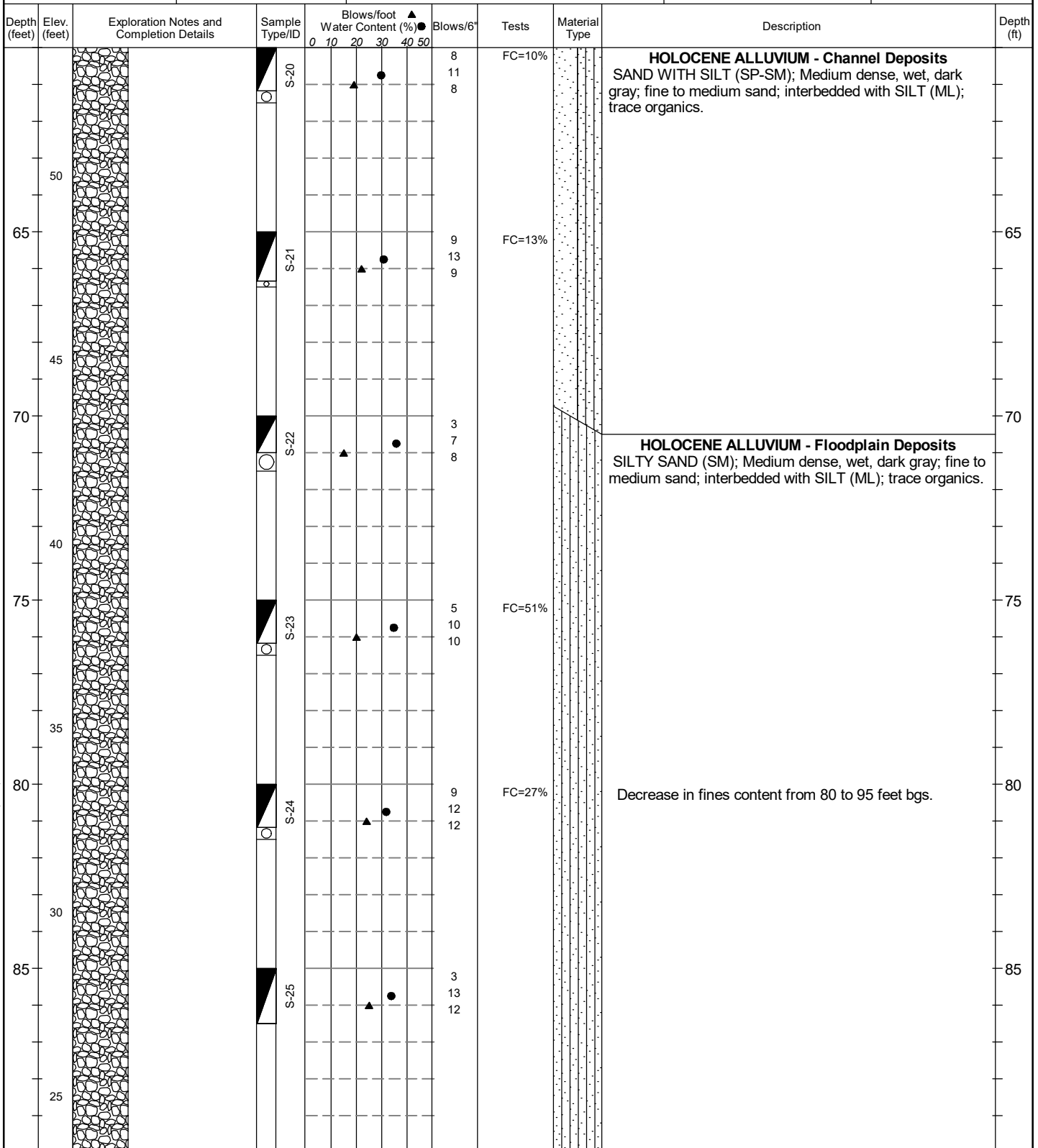
Operator
Jared

Exploration Method(s)
Mud rotary

Work Start/Completion Dates
5/7/2018 to 5/8/2018

Top of Casing Elev. (KCM Datum)
112.5'

Depth to Water (Below GS)
7.5' (ATD)



NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\KSC WEST DUWAMISH CSO (2018) - 150218.GPJ December 8, 2022

Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)

Plastic Limit |-----| Liquid Limit

- Static Water Level
- Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-2



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269300 N:200780

MW-2

Contractor
Holocene Drilling

Equipment
BK-81

Sampling Method
Autohammer; 140 lb hammer; 30" drop

Ground Surface Elev. (KCM Datum)
113.49'

Ecology Well Tag No.
BKZ 521

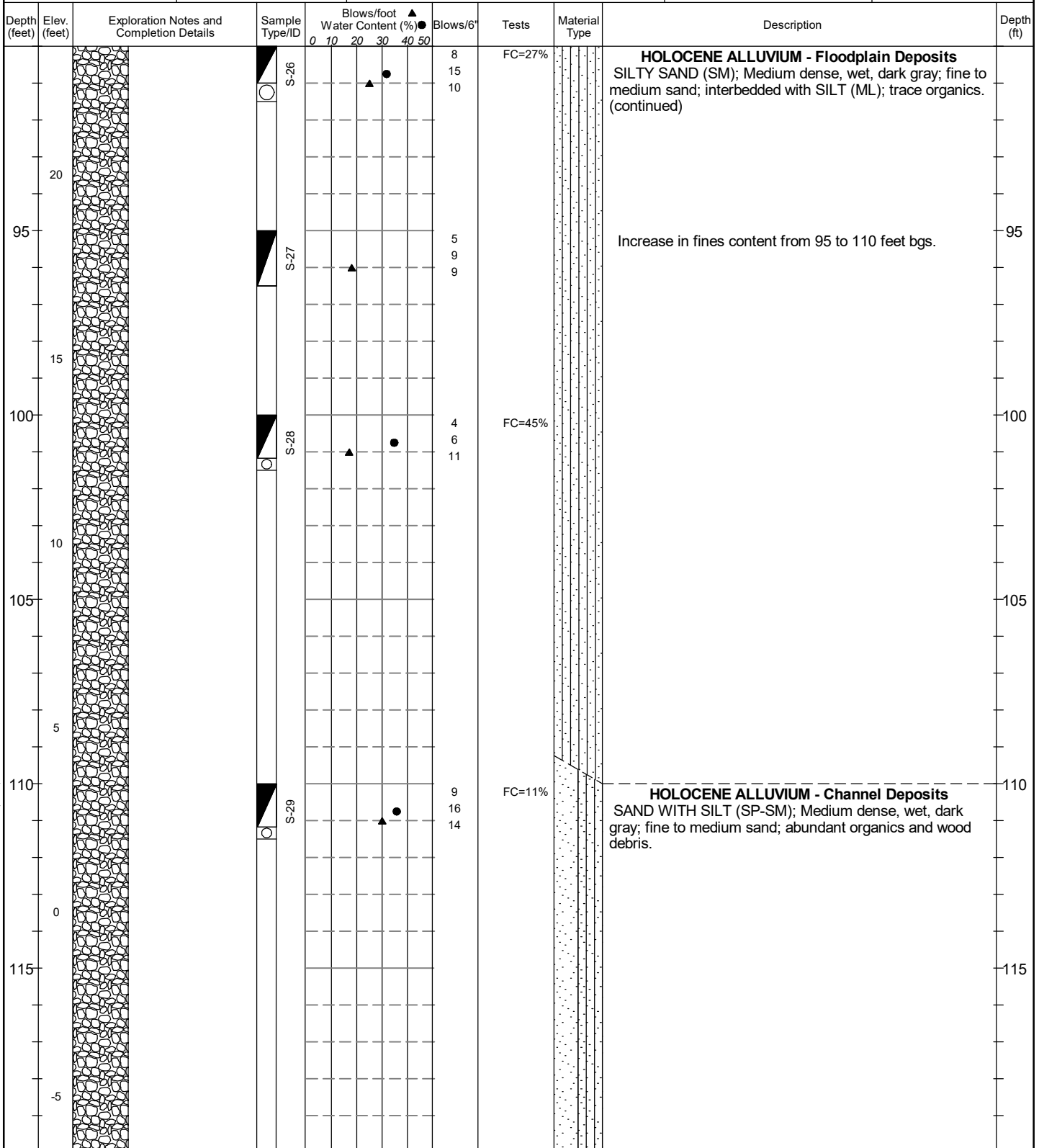
Operator
Jared

Exploration Method(s)
Mud rotary

Work Start/Completion Dates
5/7/2018 to 5/8/2018

Top of Casing Elev. (KCM Datum)
112.5'

Depth to Water (Below GS)
7.5' (ATD)



NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\KSC WEST DUWAMISH CSO (2018) - 150218.GPJ December 8, 2022

Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)

Plastic Limit ——— Liquid Limit

- Static Water Level
- Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-2

Sheet 4 of 7



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269300 N:200780

MW-2

Contractor
Holocene Drilling

Equipment
BK-81

Sampling Method
Autohammer; 140 lb hammer; 30" drop

Ground Surface Elev. (KCM Datum)
113.49'

Ecology Well Tag No.
BKZ 521

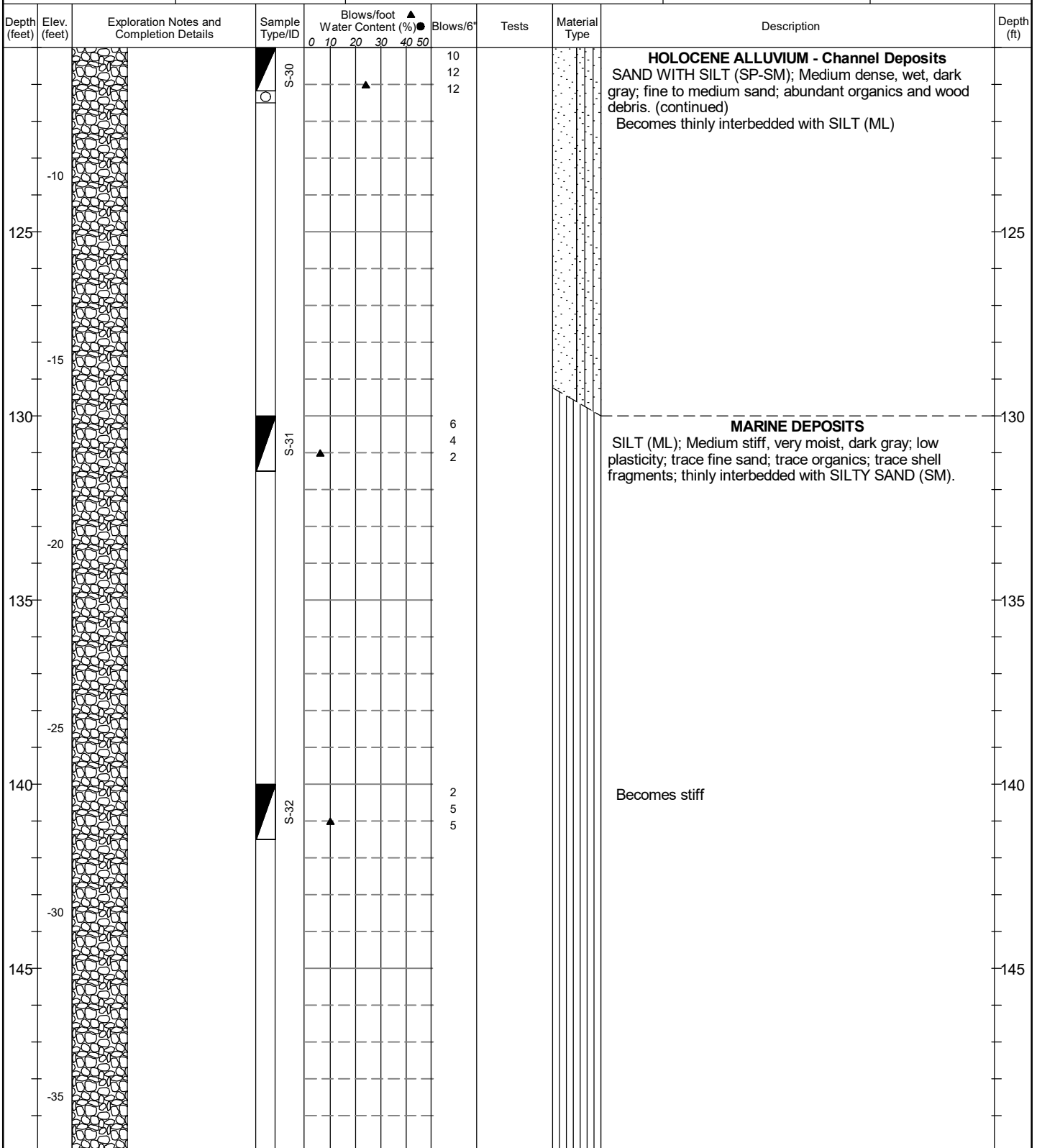
Operator
Jared

Exploration Method(s)
Mud rotary

Work Start/Completion Dates
5/7/2018 to 5/8/2018

Top of Casing Elev. (KCM Datum)
112.5'

Depth to Water (Below GS)
7.5' (ATD)



Legend

- ☐ No Soil Sample Recovery
- ▣ Split Barrel 2" X 1.375" (SPT)

Plastic Limit |-----| Liquid Limit

Water Level

- ▼ Static Water Level
- ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-2

Sheet 5 of 7



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269300 N:200780

MW-2

Contractor
Holocene Drilling

Equipment
BK-81

Sampling Method
Autohammer; 140 lb hammer; 30" drop

Ground Surface Elev. (KCM Datum)
113.49'

Ecology Well Tag No.
BKZ 521

Operator
Jared

Exploration Method(s)
Mud rotary

Work Start/Completion Dates
5/7/2018 to 5/8/2018

Top of Casing Elev. (KCM Datum)
112.5'

Depth to Water (Below GS)
7.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
			S-33							0			
			S-34							0			
			S-35							0			
			S-36							0			
			S-37							0			
			S-38							3			
			S-39							5			
			S-40							5			

Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)

Plastic Limit |-----| Liquid Limit

- Static Water Level
- Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log
MW-2

Sheet 6 of 7

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\KSC WEST DUWAMISH CSO (2018) - 150218.GPJ December 8, 2022



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269300 N:200780

MW-2

Contractor
Holocene Drilling

Equipment
BK-81

Sampling Method
Autohammer; 140 lb hammer; 30" drop

Ground Surface Elev. (KCM Datum)
113.49'

Ecology Well Tag No.
BKZ 521

Operator
Jared

Exploration Method(s)
Mud rotary

Work Start/Completion Dates
5/7/2018 to 5/8/2018

Top of Casing Elev. (KCM Datum)
112.5'

Depth to Water (Below GS)
7.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
			S-41						34		ADVANCE GLACIOLACUSTRINE DEPOSITS CLAY (CL); Hard, slightly moist, blue-gray; low plasticity. (continued)		
									50/3"				
-70													
185			S-42						47			185	
									50/2.5"				
-75													
190			S-43						42			190	
									50/2.5"				
-80													
195												195	
-85													
200												200	
-90													
205												205	
-95													

Bottom of exploration at 190.75 ft. bgs.

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\KCS\WEST DUWAMISH CSO (2018) - 150218.GPJ December 8, 2022

Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)

Plastic Limit |-----| Liquid Limit

Water Level

- Static Water Level
- Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-2



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269200 N:200650

MW-3

Contractor
Holocene Drilling

Equipment
BK-81

Sampling Method
Autohammer; 140 lb hammer; 30" drop

Ground Surface Elev. (KCM Datum)
113.12'

Ecology Well Tag No.
BKZ 522

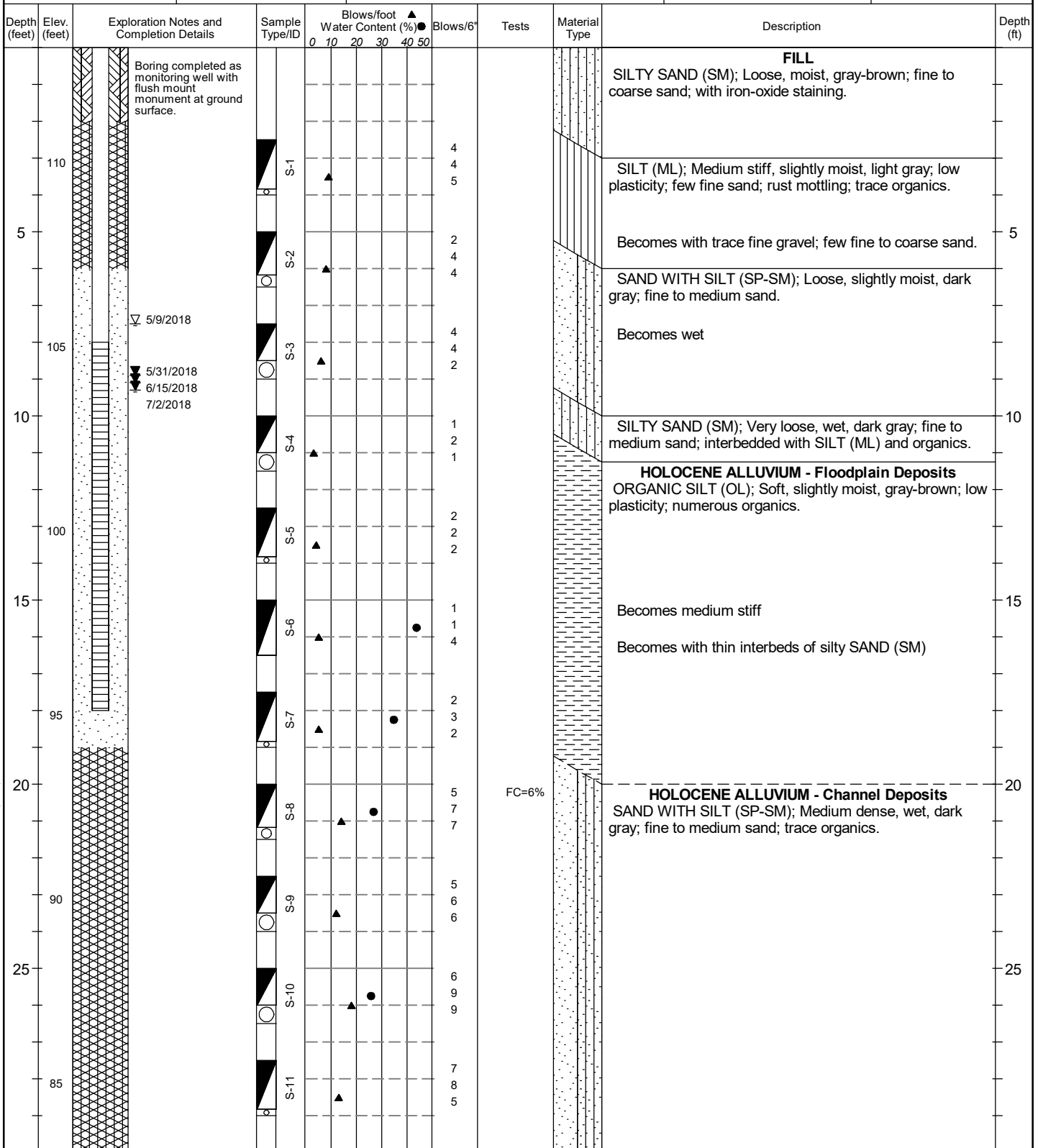
Operator
Jared

Exploration Method(s)
Mud rotary

Work Start/Completion Dates
5/9/2018

Top of Casing Elev. (KCM Datum)
112.65'

Depth to Water (Below GS)
7.5' (ATD)



Legend

- ☐ No Soil Sample Recovery
- ▣ Split Barrel 2" X 1.375" (SPT)

Plastic Limit |——| Liquid Limit

- ▼ Static Water Level
- ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log
MW-3



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269200 N:200650

MW-3

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM Datum)

Holocene Drilling

BK-81

Autohammer; 140 lb hammer; 30" drop

113.12'

Ecology Well Tag No. BKZ 522

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM Datum)

Depth to Water (Below GS)

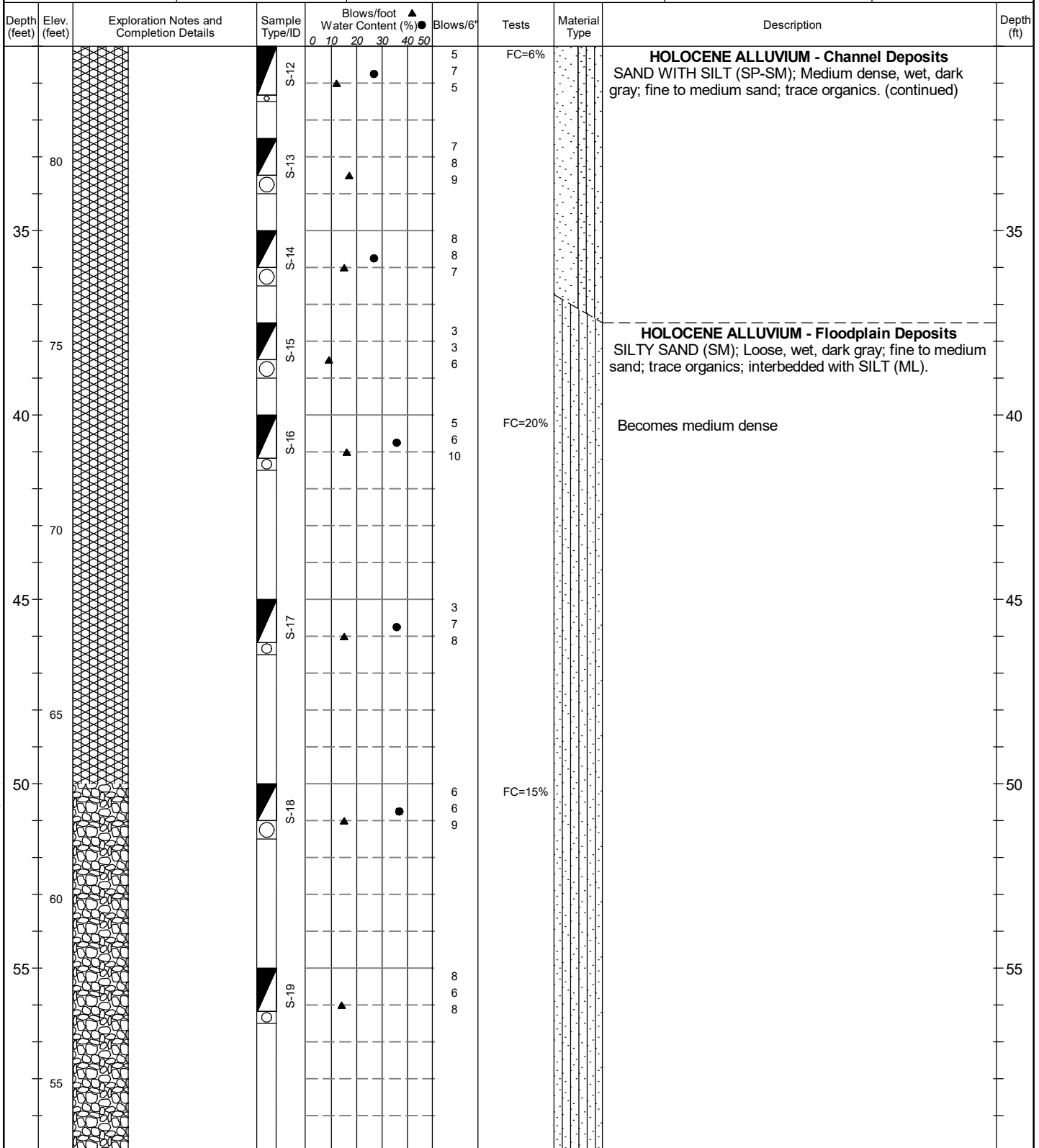
Jared

Mud rotary

5/9/2018

112.65'

7.5' (ATD)



NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\KSC WEST DUWAMISH CSO (2018) - 150218.GPJ December 8, 2022

Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)

Plastic Limit |-----| Liquid Limit

- Static Water Level
- Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-3



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269200 N:200650

MW-3

Contractor
Holocene Drilling

Equipment
BK-81

Sampling Method
Autohammer; 140 lb hammer; 30" drop

Ground Surface Elev. (KCM Datum)
113.12'

Ecology Well Tag No.
BKZ 522

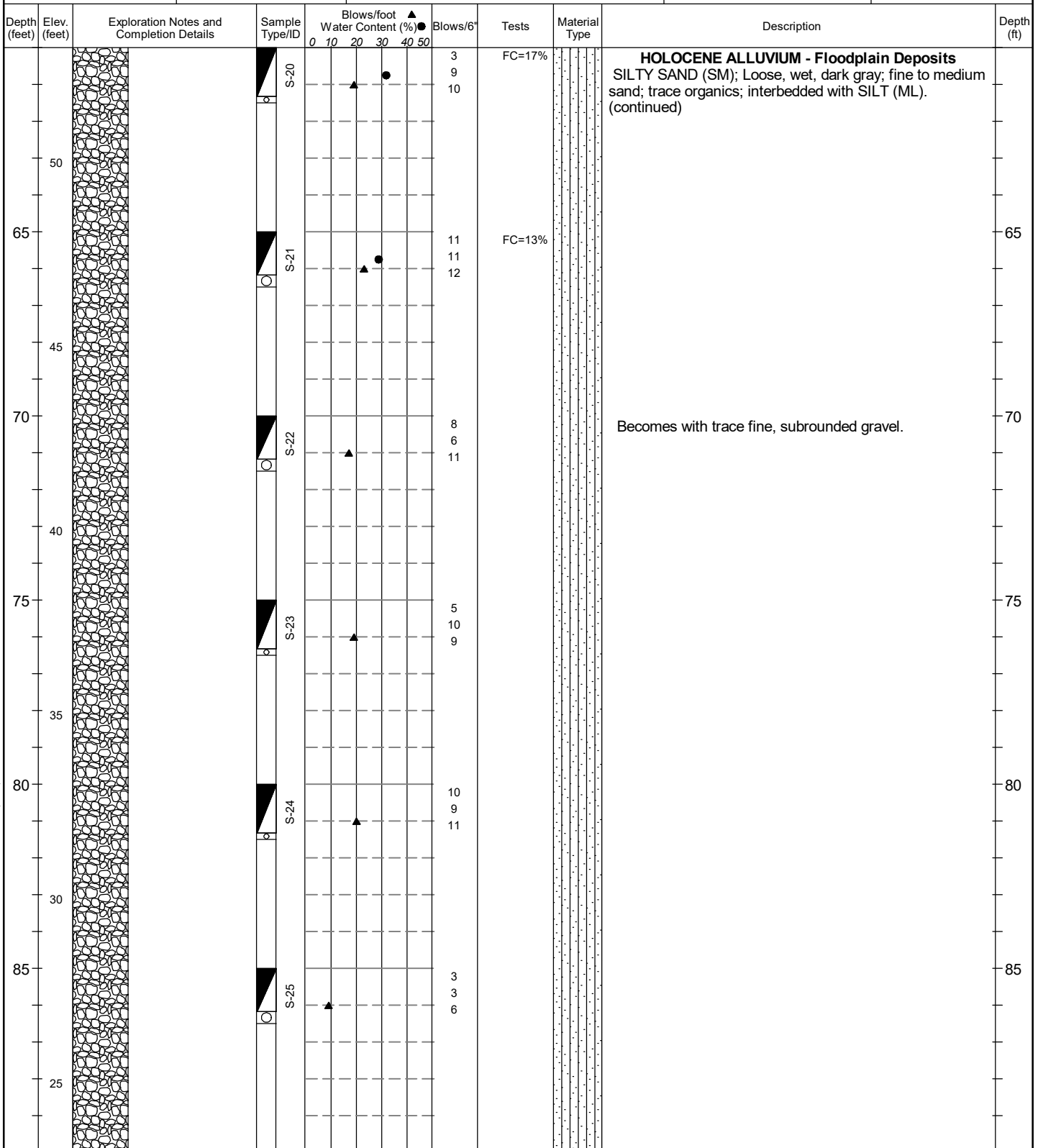
Operator
Jared

Exploration Method(s)
Mud rotary

Work Start/Completion Dates
5/9/2018

Top of Casing Elev. (KCM Datum)
112.65'

Depth to Water (Below GS)
7.5' (ATD)



Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)

Plastic Limit ——— Liquid Limit

- Static Water Level
- Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-3

Sheet 3 of 4



West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St & 2nd Avenue SW - Seattle, WA, See Figure 2

E:1269200 N:200650

MW-3

Contractor
Holocene Drilling

Equipment
BK-81

Sampling Method
Autohammer; 140 lb hammer; 30" drop

Ground Surface Elev. (KCM Datum)
113.12'

Ecology Well Tag No.
BKZ 522

Operator
Jared

Exploration Method(s)
Mud rotary

Work Start/Completion Dates
5/9/2018

Top of Casing Elev. (KCM Datum)
112.65'

Depth to Water (Below GS)
7.5' (ATD)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
5													
10													
13			S-26			▲							
20													
95													
13			S-27			▲							
14													
15													
100													
12			S-28			▲							
17													
14													
100													
105													
105													
110													
110													
115													
115													

HOLOCENE ALLUVIUM - Floodplain Deposits
SILTY SAND (SM); Loose, wet, dark gray; fine to medium sand; trace organics; interbedded with SILT (ML). (continued)

HOLOCENE ALLUVIUM - Channel Deposits
SAND WITH SILT (SP-SM); Dense, wet, dark gray; fine to medium sand; trace organics.

Bottom of exploration at 101.5 ft. bgs.

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\KSC WEST DUWAMISH CSO (2018) - 150218.GPJ December 8, 2022

Legend

- ☐ No Soil Sample Recovery
- ▣ Split Barrel 2" X 1.375" (SPT)

Plastic Limit |-----| Liquid Limit

- ▼ Static Water Level
- ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ECS
Approved by: DHM

Exploration Log MW-3

Coarse-Grained Soils - More than 50% ¹ Retained on No. 200 Sieve	Gravels - More than 50% ¹ of Coarse Fraction Retained on No. 4 Sieve	≤ 5% Fines	GW	Well-graded GRAVEL Well-graded GRAVEL WITH SAND
			GP	Poorly-graded GRAVEL Poorly-graded GRAVEL WITH SAND
			GM	SILTY GRAVEL SILTY GRAVEL WITH SAND
	Sands - 50% ¹ or More of Coarse Fraction Passes No. 4 Sieve	≥ 15% Fines	GC	CLAYEY GRAVEL CLAYEY GRAVEL WITH SAND
			SW	Well-graded SAND Well-graded SAND WITH GRAVEL
			SP	Poorly-graded SAND Poorly-graded SAND WITH GRAVEL
Fine-Grained Soils - 50% ¹ or More Passes No. 200 Sieve	Sands - 50% ¹ or More of Coarse Fraction Passes No. 4 Sieve	≤ 5% Fines	SM	SILTY SAND SILTY SAND WITH GRAVEL
			SC	CLAYEY SAND CLAYEY SAND WITH GRAVEL
			ML	SILT SANDY or GRAVELLY SILT SILT WITH SAND SILT WITH GRAVEL
	Silt and Clays Liquid Limit Less than 50%	≥ 15% Fines	CL	LEAN CLAY SANDY or GRAVELLY LEAN CLAY LEAN CLAY WITH SAND LEAN CLAY WITH GRAVEL
			OL	ORGANIC SILT SANDY or GRAVELLY ORGANIC SILT ORGANIC SILT WITH SAND ORGANIC SILT WITH GRAVEL
			MH	ELASTIC SILT SANDY or GRAVELLY ELASTIC SILT ELASTIC SILT WITH SAND ELASTIC SILT WITH GRAVEL
Silt and Clays Liquid Limit 50% or More	≥ 15% Fines	CH	FAT CLAY SANDY or GRAVELLY FAT CLAY FAT CLAY WITH SAND FAT CLAY WITH GRAVEL	
		OH	ORGANIC CLAY SANDY or GRAVELLY ORGANIC CLAY ORGANIC CLAY WITH SAND ORGANIC CLAY WITH GRAVEL	
		PT	PEAT and other mostly organic soils	

MC	=	Natural Moisture Content	GEOTECHNICAL LAB TESTS
PS	=	Particle Size Distribution	
FC	=	Fines Content (% < 0.075 mm)	
GH	=	Hydrometer Test	
AL	=	Atterberg Limits	
C	=	Consolidation Test	
Str	=	Strength Test	
OC	=	Organic Content (% Loss by Ignition)	
Comp	=	Proctor Test	
K	=	Hydraulic Conductivity Test	
SG	=	Specific Gravity Test	

Organic Chemicals			CHEMICAL LAB TESTS
BTEX	=	Benzene, Toluene, Ethylbenzene, Xylenes	
TPH-Dx	=	Diesel and Oil-Range Petroleum Hydrocarbons	
TPH-G	=	Gasoline-Range Petroleum Hydrocarbons	
VOCs	=	Volatile Organic Compounds	
SVOCs	=	Semi-Volatile Organic Compounds	
PAHs	=	Polycyclic Aromatic Hydrocarbon Compounds	
PCBs	=	Polychlorinated Biphenyls	
Metals			
RCRA8	=	As, Ba, Cd, Cr, Pb, Hg, Se, Ag, (d = dissolved, t = total)	
MTCA5	=	As, Cd, Cr, Hg, Pb (d = dissolved, t = total)	
PP-13	=	Ag, As, Be, Cd, Cr, Cu, Hg, Ni, Pb, Sb, Se, Tl, Zn (d=dissolved, t=total)	

PID	=	Photoionization Detector	FIELD TESTS
Sheen	=	Oil Sheen Test	
SPT ²	=	Standard Penetration Test	
NSPT	=	Non-Standard Penetration Test	
DCPT	=	Dynamic Cone Penetration Test	

Descriptive Term	Size Range and Sieve Number	COMPONENT DEFINITIONS
Boulders	= Larger than 12 inches	
Cobbles	= 3 inches to 12 inches	
Coarse Gravel	= 3 inches to 3/4 inches	
Fine Gravel	= 3/4 inches to No. 4 (4.75 mm)	
Coarse Sand	= No. 4 (4.75 mm) to No. 10 (2.00 mm)	
Medium Sand	= No. 10 (2.00 mm) to No. 40 (0.425 mm)	
Fine Sand	= No. 40 (0.425 mm) to No. 200 (0.075 mm)	
Silt and Clay	= Smaller than No. 200 (0.075 mm)	

% by Weight	Modifier	% by Weight	Modifier	ESTIMATED¹ PERCENTAGE
<1	=	Subtrace	15 to 25 = Little	
1 to <5	=	Trace	30 to 45 = Some	
5 to 10	=	Few	>50 = Mostly	

Dry	=	Absence of moisture, dusty, dry to the touch	MOISTURE CONTENT
Slightly Moist	=	Perceptible moisture	
Moist	=	Damp but no visible water	
Very Moist	=	Water visible but not free draining	
Wet	=	Visible free water, usually from below water table	

Non-Cohesive or Coarse-Grained Soils			RELATIVE DENSITY
Density³	SPT² Blows/Foot	Penetration with 1/2" Diameter Rod	
Very Loose	= 0 to 4	≥ 2'	
Loose	= 5 to 10	1' to 2'	
Medium Dense	= 11 to 30	3" to 1'	
Dense	= 31 to 50	1" to 3"	
Very Dense	= > 50	< 1"	

Cohesive or Fine-Grained Soils			CONSISTENCY
Consistency³	SPT² Blows/Foot	Manual Test	
Very Soft	= 0 to 1	Penetrated >1" easily by thumb. Extrudes between thumb & fingers.	
Soft	= 2 to 4	Penetrated 1/4" to 1" easily by thumb. Easily molded.	
Medium Stiff	= 5 to 8	Penetrated >1/4" with effort by thumb. Molded with strong pressure.	
Stiff	= 9 to 15	Indented ~1/4" with effort by thumb.	
Very Stiff	= 16 to 30	Indented easily by thumbnail.	
Hard	= > 30	Indented with difficulty by thumbnail.	

GEOLOGIC CONTACTS		
Observed and Distinct	Observed and Gradual	Inferred

	Exploration Log Key
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"WITH SILT" or "WITH CLAY" means 5 to 15% silt and clay, denoted by a "-" in the group name; e.g., SP-SM • "SILTY" or "CLAYEY" means >15% silt and clay • "WITH SAND" or "WITH GRAVEL" means 15 to 30% sand and gravel. • "SANDY" or "GRAVELLY" means >30% sand and gravel. • "Well-graded" means approximately equal amounts of fine to coarse grain sizes • "Poorly graded" means unequal amounts of grain sizes • Group names separated by "/" means soil contains layers of the two soil types; e.g., SM/ML.

Soils were described and identified in the field in general accordance with the methods described in ASTM D2488. Where indicated in the log, soils were classified using ASTM D2487 or other laboratory tests as appropriate. Refer to the report accompanying these exploration logs for details.

1. Estimated or measured percentage by dry weight
 2. (SPT) Standard Penetration Test (ASTM D1586)
 3. Determined by SPT, DCPT (ASTM STP399) or other field methods. See report text for details.



South Park CSO - 150218

Monitoring Well Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St and 2nd Ave SW, Seattle, WA

E:1269300 N:200720

MW-4

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM datum)

Holt

HSA

Autohammer / Dames and Moore

112.93'

Ecology Well Tag No.
BPK-643

Operator

Exploration Method(s)
8.5" OD X 4.25" ID
Hollow-Stem Auger

Work Start/Completion Dates

Top of Casing Elev. (KCM datum)

Depth to Water (Below GS)

Joe Koonz

5/13/2022

112.56'

8.12' (Static)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
		Drillers hand cleared 0 to 0.5ft			Blows (non-SPT)=50/6 PID=0.0 Sheen=None		FILL SILTY SAND (SM); dense, moist, gray brown; fine to medium sand; few, fine, subrounded gravel; brick debris.	
		Monument in Concrete			Blows (non-SPT)=9,9,11 PID=0.1 Sheen=None		SILT (ML); stiff, slightly moist, light gray; low plasticity; trace fine sand.	
110		Sealed with bentonite chips NSF/ANSI 60.			Blows (non-SPT)=2,3,5 PID=0.2 Sheen=None			5
		2" Schedule 40 PVC Casing		MW-4-4.5 (3.5-4.5')	Blows (non-SPT)=5,8,7 PID=0.1 Sheen=None		SAND WITH SILT (SP-SM); loose to medium dense, moist, dark gray; fine to medium sand.	
5		10/20 Silica sand filter pack			Blows (non-SPT)=4,6,9 PID=0.2 Sheen=None			
		0.010" Schedule 40 PVC slotted screen			Blows (non-SPT)=6,11,15 PID=0.2 Sheen=None		Becomes very moist Becomes wet	
		▼ 5/23/2022 ▽ 5/13/2022		MW-4-9.5 (8.5-9.5')	Blows (non-SPT)=5,7,8 PID=0.1 Sheen=None			10
10					Blows (non-SPT)=3,4,4 PID=0.0 Sheen=None		HOLOCENE ALLUVIUM - Floodplain Deposits SILT (ML); medium stiff, wet, dark brown; low plasticity; few, fine sand; organics; sulfur-like odor.	
				MW-4-12.5 (11.5-12.5')			Bottom of exploration at 12.5 ft. bgs. Note: No petroleum-like odor except where noted	
100								15
15								
95								

Legend

■ Split Barrel 3" X 2.375"

Water Level

▼ Static Water Level
▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: DRB
Approved by: ZAS

Exploration Log MW-4

Sheet 1 of 1



South Park CSO - 150218

Project Address & Site Specific Location

SW Michigan St and 2nd Ave SW, Seattle, WA

Monitoring Well Log

Coordinates (SPN NAD83 ft)

E:1269200 N:200800

Exploration Number

MW-5

Ecology Well Tag No.
BPK-641

Contractor

Holt

Equipment

HSA

Sampling Method

Autohammer / Dames and Moore

Ground Surface Elev. (KCM datum)

114.05'

Operator

Joe Koonz

Exploration Method(s)

8.5" OD X 4.25" ID
Hollow-Stem Auger

Work Start/Completion Dates

5/13/2022

Top of Casing Elev. (KCM datum)

113.76'

Depth to Water (Below GS)

8.42' (Static)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
		<div style="border: 1px solid black; padding: 2px;"> Monument in Concrete Sealed with bentonite chips NSF/ANSI 60. 2" Schedule 40 PVC Casing 10/20 Silica sand filter pack 0.010" Schedule 40 PVC slotted screen ▽ 5/23/2022 ▽ 5/13/2022 </div>					FILL	
				MW-5-5.5 (4.5-5.5')	Blows (non-SPT)=50/6 PID=0.0 Sheen=None Blows (non-SPT)=22,17,14 PID=0.0 Sheen=None Blows (non-SPT)=5,8,11 PID=0.0 Sheen=None Blows (non-SPT)=3,4,4 PID=0.0 Sheen=None	SILT WITH GRAVEL (ML); hard, moist, dark gray; fine to medium sand; fine, subrounded gravel. ----- SILT (ML); very stiff, slightly moist, light gray; low plasticity; trace fine sand; trace organic debris; rust orange staining.	5	
				MW-5-10.5; MW-X-XX (9.5-10.5')	Blows (non-SPT)=1,3,5 PID=0.0 Sheen=None Blows (non-SPT)=5,7,7 PID=0.0 Sheen=None Blows (non-SPT)=3,6,7 PID=0.0 Sheen=None	SAND WITH SILT (SP-SM); loose, very moist, dark gray; fine to medium sand. ----- Becomes wet.	10	
				MW-5-13 (12-13')	Blows (non-SPT)=2,3,4 PID=0.0 Sheen=None Blows (non-SPT)=2,7,8 PID=0.0 Sheen=None	HOLOCENE ALLUVIUM - Floodplain Deposits SILT (ML); medium stiff to stiff, wet, dark brown; low plasticity; few sand; organics; sulfur-like odor.		
							Bottom of exploration at 14 ft. bgs. Note: No petroleum-like odor except where noted	15

Legend

■ Split Barrel 3" X 2.375"

Water Level

▽ Static Water Level
▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: DRB
Approved by: ZAS

**Exploration Log
MW-5**

Sheet 1 of 1



South Park CSO - 150218

Monitoring Well Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St and 2nd Ave SW, Seattle, WA

E:1269100 N:200690

MW-6

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM datum)

Holt

HSA

Autohammer / Dames and Moore

115.51'

Ecology Well Tag No. BPK-642

Operator

Exploration Method(s)
8.5" OD X 4.25" ID
Hollow-Stem Auger

Work Start/Completion Dates

Top of Casing Elev. (KCM datum)

Depth to Water (Below GS)

Joe Koonz

5/13/2022

115.09'

10.11' (Static)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
115		Drillers had cleared 0 to 0.5ft			Blows (non-SPT)=27,24,18 PID=0.4 Sheen=None		FILL SILT WITH SAND (ML); very stiff, moist, dark brown; low plasticity; fine to medium sand; few, fine to coarse, subrounded to subangular gravel.	
		Monument in Concrete			Blows (non-SPT)=8,5,11 PID=0.2 Sheen=None		SAND WITH SILT (SP-SM); medium dense, moist, dark gray; fine to medium sand.	
		Sealed with bentonite chips NSF/ANSI 60.			Blows (non-SPT)=5,9,11 PID=0.3 Sheen=None			
		2" Schedule 40 PVC Casing		MW-6-5 (4-5')	Blows (non-SPT)=7,5,9 PID=0.1 Sheen=None		SANDY SILT (ML); stiff, moist, brown; low plasticity; fine sand.	5
5		10/20 Silica sand filter pack			Blows (non-SPT)=5,7,3 PID=0.2 Sheen=None			
		0.010" Schedule 40 PVC slotted screen			Blows (non-SPT)=6,15,11 PID=0.5 Sheen=None		SAND WITH SILT (SP-SM); medium dense, moist, dark gray; fine to medium sand.	
		5/13/2022			Blows (non-SPT)=5,7,11 PID=0.4 Sheen=None		Becomes wet	10
		5/23/2022			Blows (non-SPT)=2,3,4 PID=0.4 Sheen=None			
				MW-6-12 (11-12')	Blows (non-SPT)=2,2,5 PID=0.3 Sheen=None		HOLOCENE ALLUVIUM - Floodplain Deposits SILT (ML); medium stiff, wet, dark brown; low plasticity; few, fine sand; sulfur-like odor.	
				MW-6-14 (13-14')				
							Bottom of exploration at 14 ft. bgs.	
							Note: No petroleum-like odor except where noted	15

Legend

■ Split Barrel 3" X 2.375"

Water Level

▼ Static Water Level
▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: DRB
Approved by: ZAS

Exploration Log MW-6

Sheet 1 of 1



South Park CSO - 150218

Monitoring Well Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St and 2nd Ave SW, Seattle, WA

E:1269100 N:200610

MW-7

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM datum)

Holt

HSA

Autohammer / Dames and Moore

114.74'

Ecology Well Tag No. BPK-639

Operator

Exploration Method(s)
8.5" OD X 4.25" ID
Hollow-Stem Auger

Work Start/Completion Dates

Top of Casing Elev. (KCM datum)

Depth to Water (Below GS)

Joe Koonz

8.5" OD X 4.25" ID
Hollow-Stem Auger

5/12/2022

114.3'

9.01' (Static)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
		Drillers hand cleared 0 to 1.5ft					FILL	
		Monument in Concrete					SILT (ML); moist, gray; low plasticity; fine sand; fine, subrounded gravel.	
		Sealed with bentonite chips NSF/ANSI 60.			Blows (non-SPT)=19,25,17 PID=0.0 Sheen=None		SAND WITH SILT (SP-SM); medium dense, moist, dark brown to gray; fine to medium sand; subrounded to subangular gravel	
		2" Schedule 40 PVC Casing		MW-7-4.5 (3.5-4.5')	Blows (non-SPT)=7,9,11 PID=0.0 Sheen=None			
5	110	10/20 Silica sand filter pack			Blows (non-SPT)=5,9,11 PID=0.0 Sheen=None		Trace orange grains Wood debris (twig)	5
		0.010" Schedule 40 PVC slotted screen			Blows (non-SPT)=9,8,6 PID=0.0 Sheen=None			
		▼ 5/23/2022			Blows (non-SPT)=2,8,9 PID=0.0 Sheen=None			
10	105			MW-7-11.5 (10.5-11.5')	Blows (non-SPT)=7,7,5 PID=0.0 Sheen=None		SILT WITH SAND (ML); stiff, very moist, dark brown; low plasticity; fine to medium sand.	10
					Blows (non-SPT)=5,5,10 PID=0.0 Sheen=None		SAND WITH SILT (SP-SM); loose, very moist, dark brown to gray; fine to medium sand, few coarse sand; fine, subrounded gravel.	
				MW-7-13.5 (12.5-13.5')	Blows (non-SPT)=3,3,5 PID=0.0 Sheen=None		HOLOCENE ALLUVIUM - Floodplain Deposits	
		▼ 5/12/2022			Blows (non-SPT)=6,4,7 PID=0.0 Sheen=None		SILT (ML); medium stiff, very moist, dark brown; low plasticity; few, fine sand; organics; sulfur-like odor.	
15	100						Bottom of exploration at 15 ft. bgs.	15
							Note: No petroleum-like odor except where noted	

Legend

■ Split Barrel 3" X 2.375"

Water Level

▼ Static Water Level
▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: DRB
Approved by: ZAS

Exploration Log MW-7

Sheet 1 of 1



South Park CSO - 150218

Project Address & Site Specific Location

SW Michigan St and 2nd Ave SW, Seattle, WA

Monitoring Well Log

Coordinates (SPN NAD83 ft)

E:1269200 N:200710

Exploration Number

MW-8

Ecology Well Tag No.
BPK-640

Contractor

Holt

Equipment

HSA

Sampling Method

Autohammer / Dames and Moore

Ground Surface Elev. (KCM datum)

113.81'

Operator

Joe Koonz

Exploration Method(s)

8.5" OD X 4.25" ID
Hollow-Stem Auger

Work Start/Completion Dates

5/12/2022

Top of Casing Elev. (KCM datum)

113.09'

Depth to Water (Below GS)

9.13' (Static)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
		Drillers hand cleared 0 to 1.0ft					FILL	
		Monument in Concrete			Blows (non-SPT)=50/6 PID=0.0 Sheen=None		SILT (ML); hard, moist, gray; low plasticity; trace, fine, subrounded gravel; organic debris; brick debris.	
		Sealed with bentonite chips NSF/ANSI 60. 2" Schedule 40 PVC Casing			Blows (non-SPT)=13,25,32 PID=0.0 Sheen=None		SILTY SAND (SM); dense, moist, dark gray; fine sand; trace, coarse, subangular gravel.	
		10/20 Silica sand filter pack			Blows (non-SPT)=4,7,9 PID=0.0 Sheen=None		SILT (ML); stiff, moist, blue gray; low plasticity; few, fine, subrounded gravel; organic debris.	5
110		0.010" Schedule 40 PVC slotted screen		MW-8-5.5 (4.5-5.5')	Blows (non-SPT)=4,6,8 PID=0.0 Sheen=None		SAND WITH SILT (SP-SM); loose, moist, dark gray; fine to medium sand.	
5					Blows (non-SPT)=2,2,3 PID=0.0 Sheen=None		Becomes wet	
		▼ 5/23/2022		MW-8-9.5 (8.5-9.5')	Blows (non-SPT)=1,3,4 PID=0.0 Sheen=None		HOLOCENE ALLUVIUM - Floodplain Deposits SILT (ML); soft to medium soft, moist, dark brown; low plasticity; few, fine sand; slight sulfur-like odor.	10
105		▽ 5/12/2022		MW-8-11 (10-11')	Blows (non-SPT)=3,5,4 PID=0.0 Sheen=None		Becomes wet	
10							Bottom of exploration at 13 ft. bgs.	
							Note: No petroleum-like odor except where noted	
100								15
15								
95								

Legend

- ☐ No Soil Sample Recovery
- ▣ Split Barrel 3" X 2.375"

Water Level

- ▼ Static Water Level
- ▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: DRB
Approved by: ZAS

**Exploration Log
MW-8**

Sheet 1 of 1



King County West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St and 2nd Ave SW, Seattle, WA

E: 1269200 N: 200810

MW-9

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM datum)

Ecology Well Tag No. BNV-465

Cascade Drilling, LP

Truck-mounted CME 75

Autohammer; 140 lb hammer; 30" drop

114.16'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM datum)

Depth to Water (Below GS)

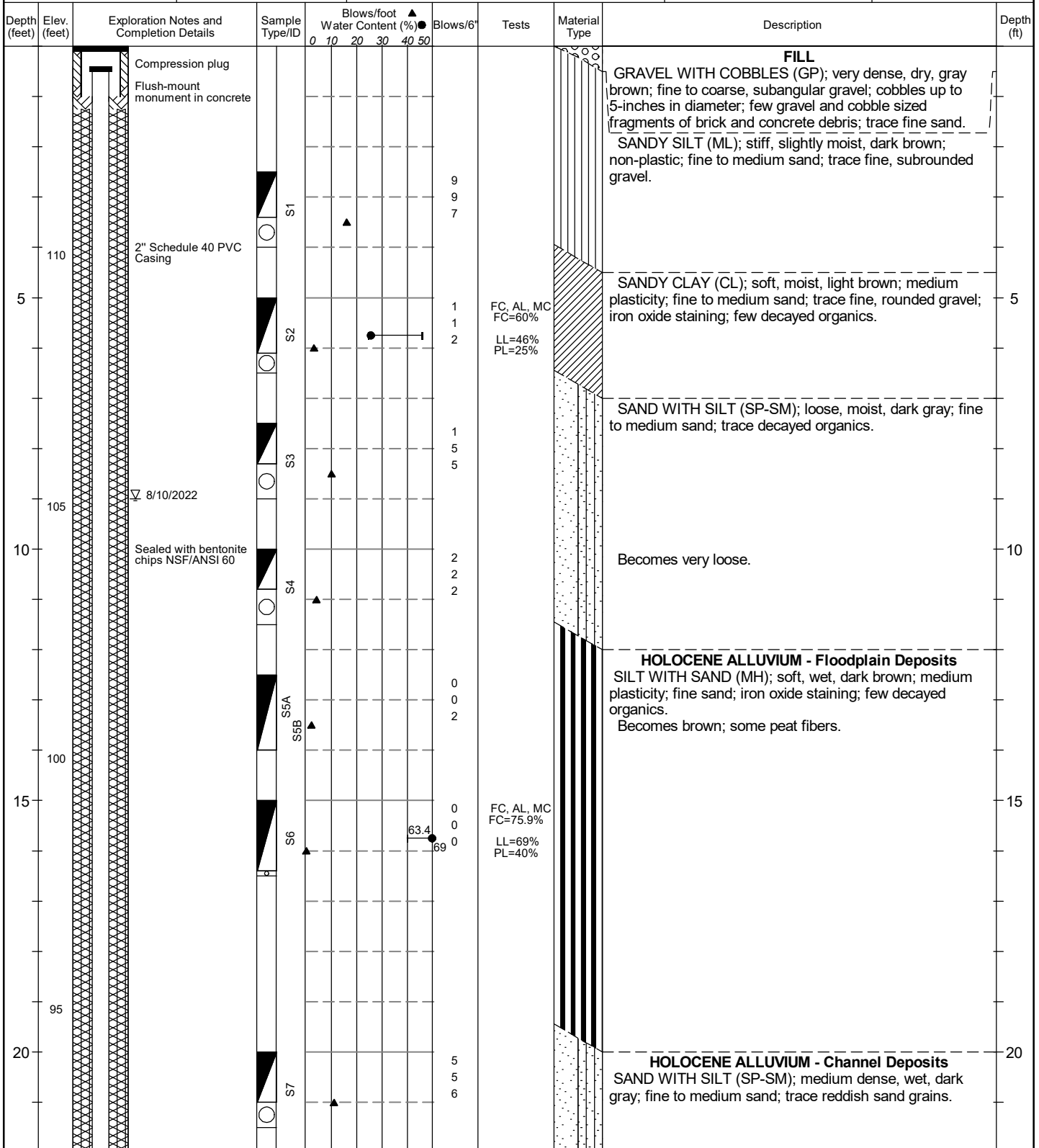
Arturo

Mud rotary

8/10/2022

NA

9' (ATD)



NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\150218 - WEST DUWAMISH CSO.GPJ November 16, 2022

Legend

- ☐ No Soil Sample Recovery
- ▣ Split Barrel 2" X 1.375" (SPT)

Plastic Limit |——| Liquid Limit

Water Level

∇ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ABM
Approved by: HNH 10/25/2022

Exploration Log MW-9



King County West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St and 2nd Ave SW, Seattle, WA

E:1269200 N:200810

MW-9

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM datum)

Ecology Well Tag No.
BNV-465

Cascade Drilling, LP

Truck-mounted CME 75

Autohammer; 140 lb hammer; 30" drop

114.16'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM datum)

Depth to Water (Below GS)

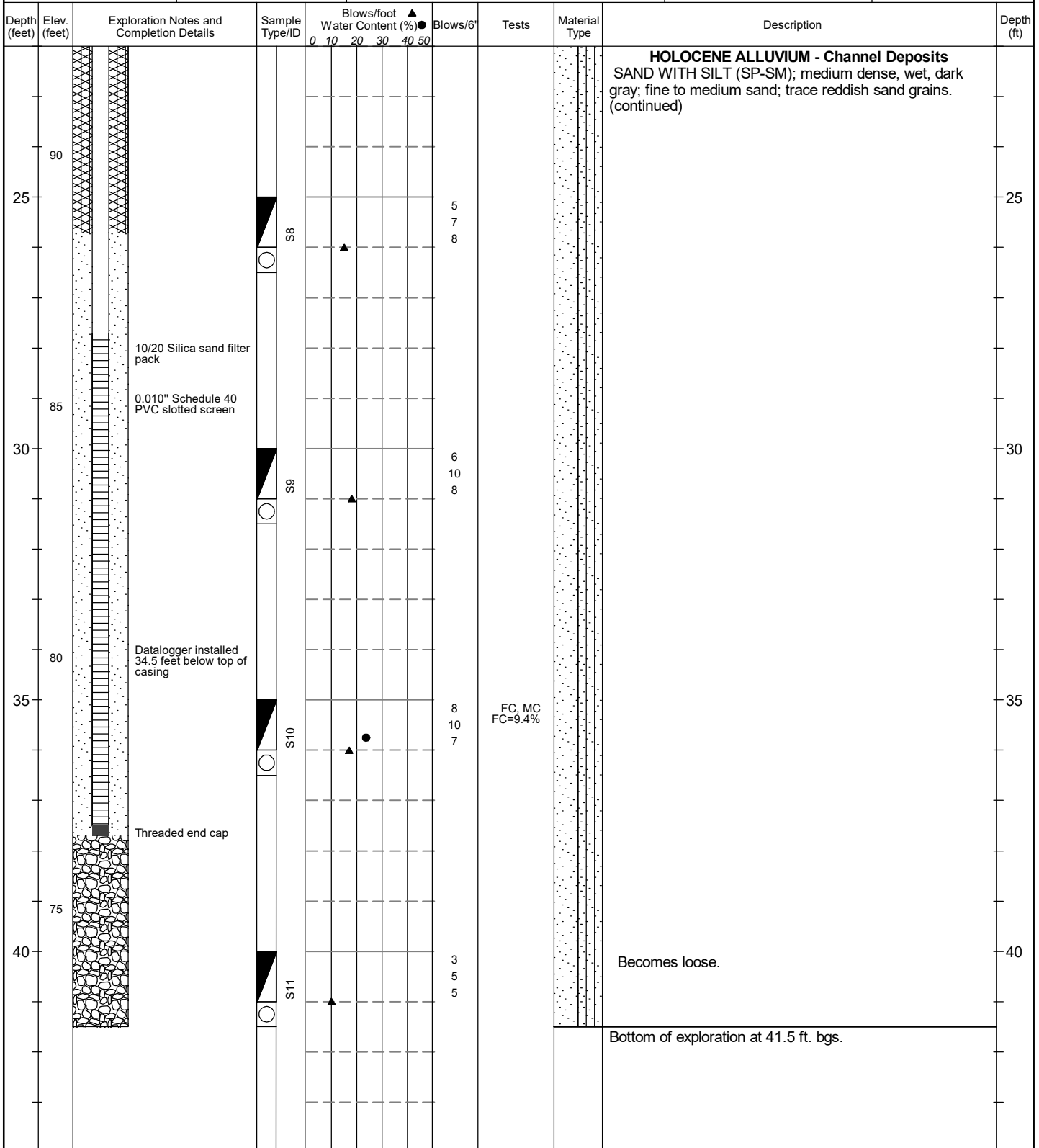
Arturo

Mud rotary

8/10/2022

NA

9' (ATD)



NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\150218 - WEST DUWAMISH CSO.GPJ November 16, 2022

Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)

Plastic Limit |-----| Liquid Limit

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ABM
Approved by: HNH 10/25/2022

Exploration Log MW-9



King County West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St and 2nd Ave SW, Seattle, WA

E:1269300 N:200730

MW-10

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM datum)

Cascade Drilling, LP

Truck-mounted CME 75

Autohammer; 140 lb hammer; 30" drop

112.92'

Ecology Well Tag No. BNV-466

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM datum)

Depth to Water (Below GS)

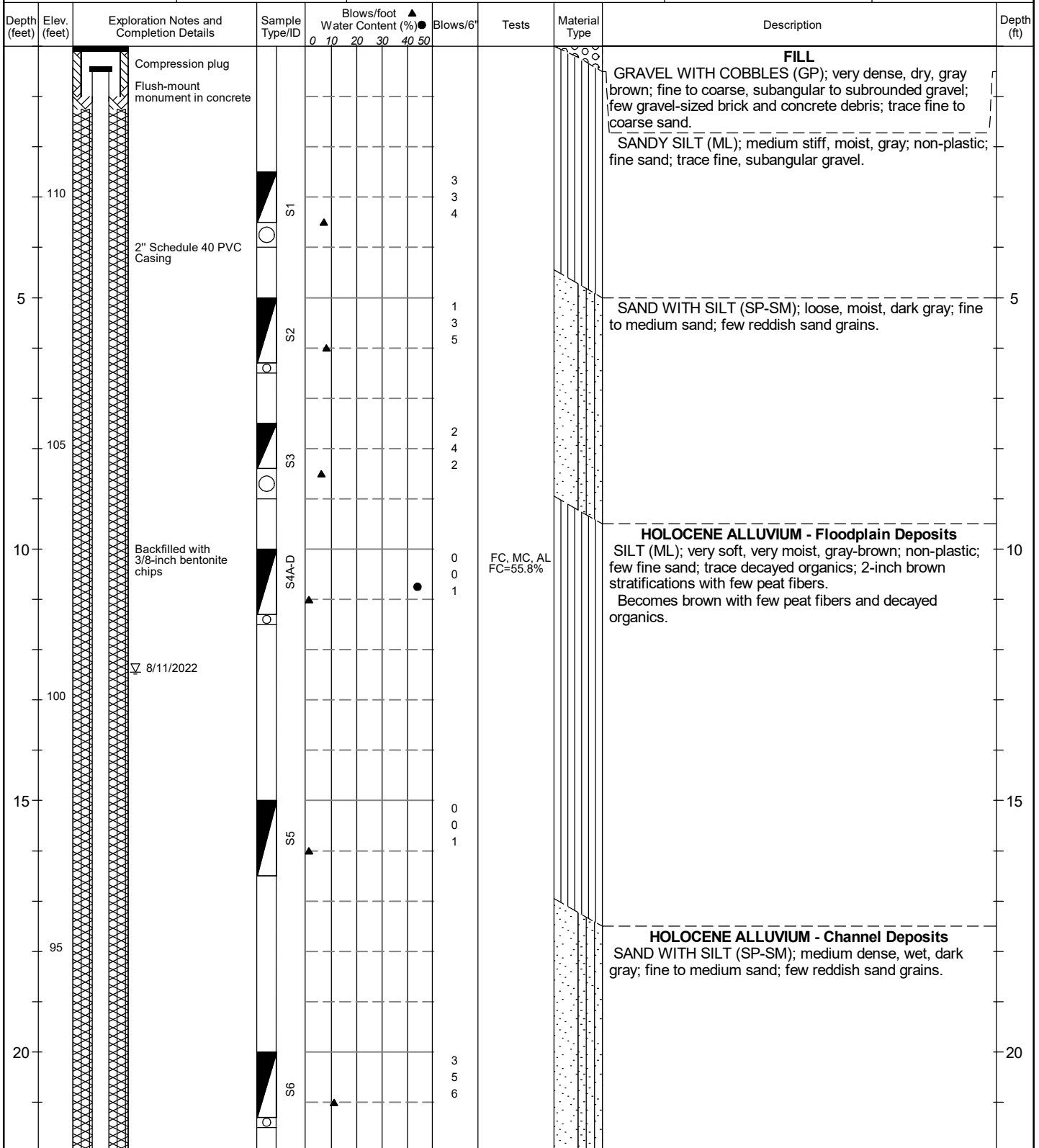
Arturo

Mud rotary

8/11/2022

NA

12.45' (ATD)



NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\150218 - WEST DUWAMISH CSO.GPJ November 16, 2022

Legend

- ☐ No Soil Sample Recovery
- ▣ Split Barrel 2" X 1.375" (SPT)

Plastic Limit |——| Liquid Limit

Water Level

∇ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ABM
Approved by: HNH 10/25/2022

Exploration Log MW-10



King County West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St and 2nd Ave SW, Seattle, WA

E:1269300 N:200730

MW-10

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM datum)

Ecology Well Tag No.
BNV-466

Cascade Drilling, LP

Truck-mounted CME 75

Autohammer; 140 lb hammer; 30" drop

112.92'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM datum)

Depth to Water (Below GS)

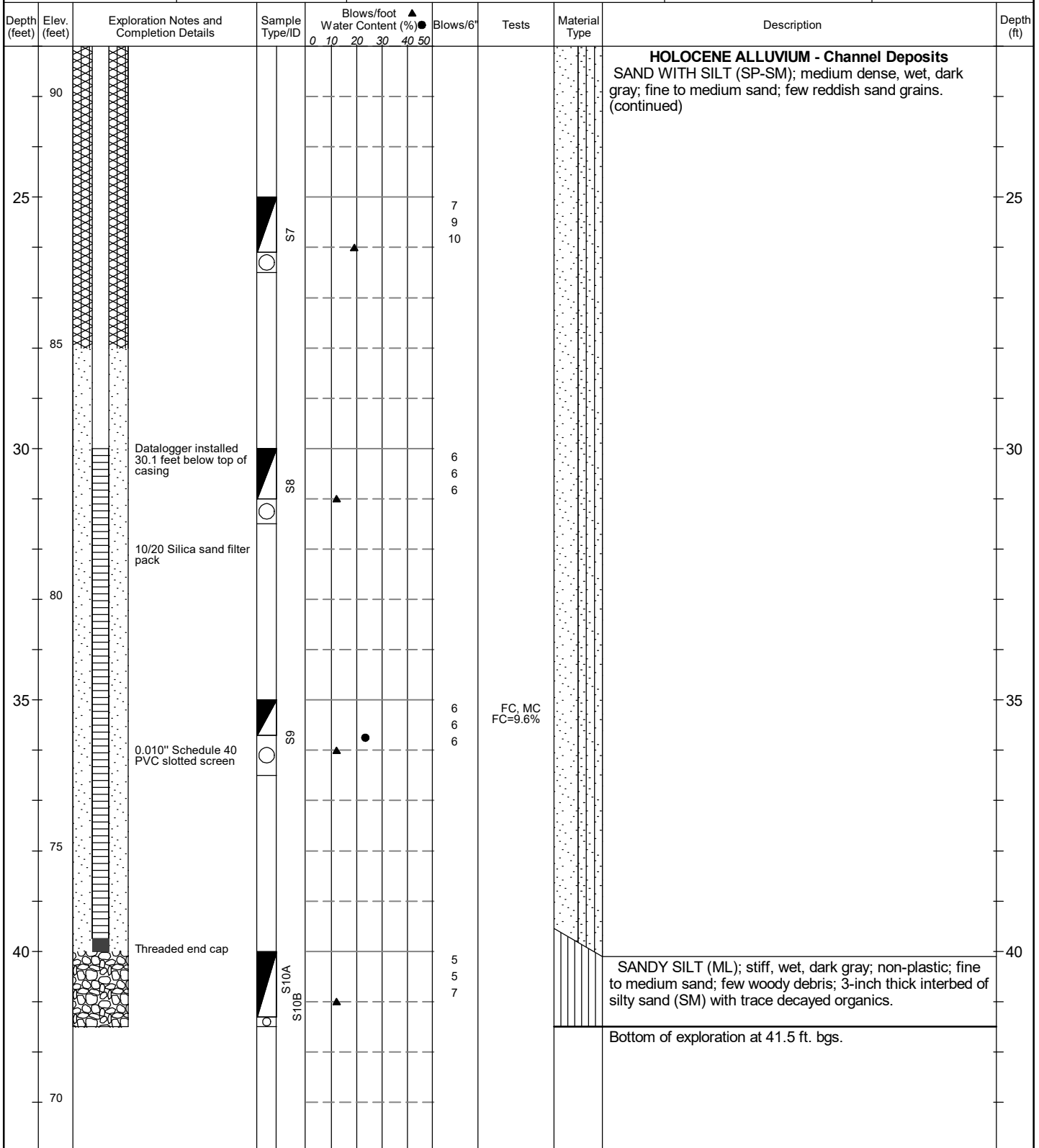
Arturo

Mud rotary

8/11/2022

NA

12.45' (ATD)



NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\150218 - WEST DUWAMISH CSO.GPJ November 16, 2022

Legend

- ☐ No Soil Sample Recovery
- ▣ Split Barrel 2" X 1.375" (SPT)

Plastic Limit ——— Liquid Limit

Water Level

▽ Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ABM
Approved by: HNH 10/25/2022

Exploration Log MW-10

Sheet 2 of 2



King County West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St and 2nd Ave SW, Seattle, WA

E:1269100 N:200700

MW-11

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM datum)

Cascade Drilling, LP

Truck-mounted CME 75

Autohammer; 140 lb hammer; 30" drop

115.69'

Ecology Well Tag No. BNV-467

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM datum)

Depth to Water (Below GS)

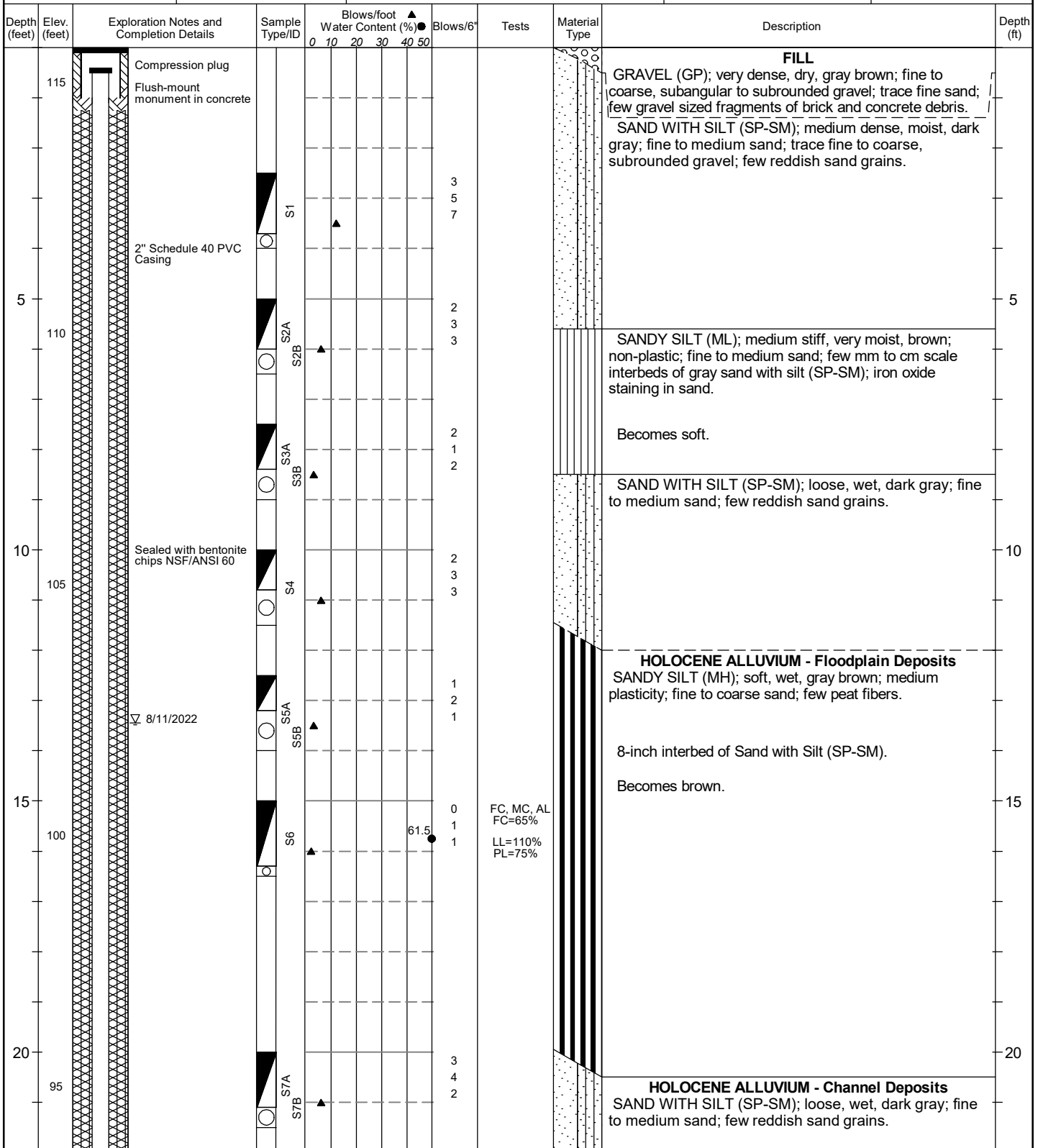
Arturo

Mud rotary

8/11/2022

NA

13.45' (ATD)



NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\150218 - WEST DUWAMISH CSO.GPJ November 16, 2022

Legend □ No Soil Sample Recovery ▨ Split Barrel 2" X 1.375" (SPT)	Plastic Limit —— Liquid Limit ▽ Water Level	See Exploration Log Key for explanation of symbols Logged by: ABM Approved by: HNH 10/25/2022	Exploration Log MW-11 Sheet 1 of 2
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King County West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St and 2nd Ave SW, Seattle, WA

E:1269100 N:200700

MW-11

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM datum)

Cascade Drilling, LP

Truck-mounted CME 75

Autohammer; 140 lb hammer; 30" drop

115.69'

Ecology Well Tag No.
BNV-467

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM datum)

Depth to Water (Below GS)

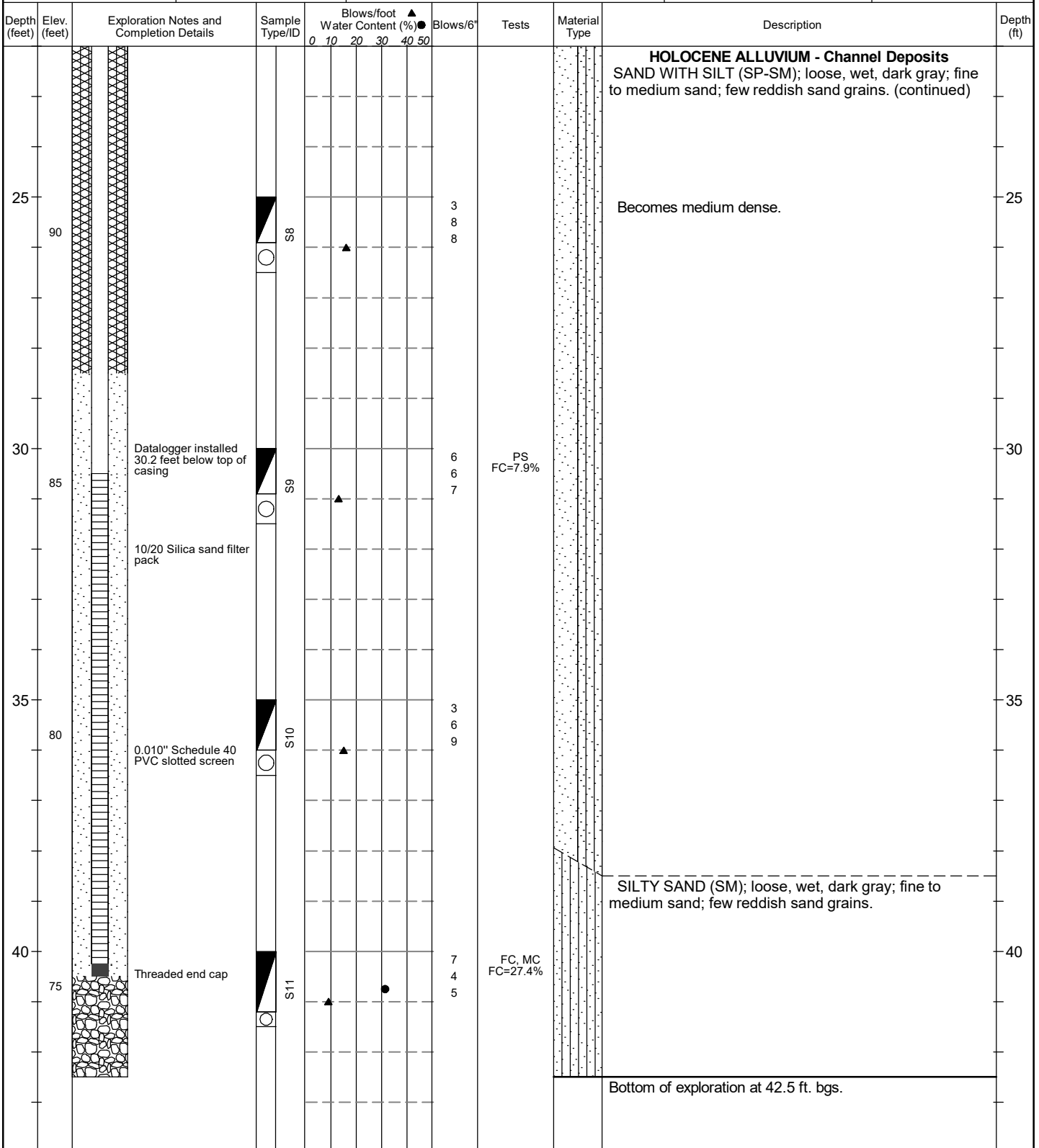
Arturo

Mud rotary

8/11/2022

NA

13.45' (ATD)



NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\150218 - WEST DUWAMISH CSO.GPJ November 16, 2022

Legend

- No Soil Sample Recovery
- Split Barrel 2" X 1.375" (SPT)

Plastic Limit |———| Liquid Limit

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ABM
Approved by: HNH 10/25/2022

Exploration Log MW-11

Sheet 2 of 2



King County West Duwamish CSO - 150218

Monitoring Well Log

Project Address & Site Specific Location

SW Michigan St and 2nd Ave SW, Seattle, WA

Coordinates (SPN NAD83 ft)

E:1269200 N:200720

Exploration Number

APW-01

Contractor

Cascade Drilling, LP

Equipment

LS 250 Sonic Rig

Sampling Method

Rotary core

Ground Surface Elev. (KCM datum)

114.23'

Operator

Joe

Exploration Method(s)

12" Sonic

Work Start/Completion Dates

8/25/2022 to 8/26/2022

Top of Casing Elev. (KCM datum)

NA

Depth to Water (Below GS)

12.45' (ATD)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
5	110	Compression plug 12-inch diameter flush-mount monument in concrete 8-inch diameter SCH80 PVC casing Backfilled with 3/8-inch bentonite chips 8/25/2022	S1				FILL GRAVEL (GP); dry, gray brown; fine to coarse, subangular to subrounded gravel; fine to coarse sand; gravel contains brick and concrete fragments with basalt rock.	5
			S2				SILTY SAND (SM); dry, gray brown; fine to coarse sand; trace fine subrounded gravel; few sand-sized decayed organics.	
			S3				SILT (ML); slightly moist, gray; low plasticity; fine sand.	
10	105		S4				SAND WITH SILT (SP-SM); slightly moist, dark gray; fine to medium sand; trace coarse, rounded gravel; few red sand grains.	10
15	100		S5	PS, MC, AL	FC=74.3% MC=35.8%		HOLOCENE ALLUVIUM - Floodplain Deposits SILT (ML); moist, gray; non-plastic; fine sand; few roots and decayed organics. Becomes wet.	15
20	95		S6				HOLOCENE ALLUVIUM - Channel Deposits SAND WITH SILT (SP-SM); wet, dark gray; fine to coarse sand; few reddish sand grains.	20
25	90		S7					25

Legend

Continuous core 7" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ABM
Approved by: HNH 10/25/2022

Exploration Log
APW-01

Sheet 1 of 2



King County West Duwamish CSO - 150218

Monitoring Well Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St and 2nd Ave SW, Seattle, WA

E:1269200 N:200720

APW-01

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM datum)

Ecology Well Tag No.
BNV-468

Cascade Drilling, LP

LS 250 Sonic Rig

Rotary core

114.23'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM datum)

Depth to Water (Below GS)

Joe

12" Sonic

8/25/2022 to 8/26/2022

NA

12.45' (ATD)

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Analytical Sample Number & Lab Test(s)	Field Tests	Material Type	Description	Depth (ft)
30	85	#2/12 monterey sand filter pack					HOLOCENE ALLUVIUM - Channel Deposits SAND WITH SILT (SP-SM); wet, dark gray; fine to coarse sand; few reddish sand grains. (continued)	30
		8-inch diameter stainless steel, 0.035-slot, wire-wrapped screen	S8	FC, MC	FC=3.8% MC=22%		SAND (SP); wet, dark gray; medium to coarse sand; few reddish sand grains.	
	80		S9					
35			S10				SILTY SAND (SM); wet, dark gray; fine to medium sand; few reddish sand grains.	35
			S11				SAND WITH SILT (SP-SM); wet, dark gray; fine to medium sand; few reddish sand grains.	
	75		S12	FC, MC	FC=46.9% MC=32.3%		SILTY SAND (SM); wet, dark gray; fine sand; few reddish sand grains.	
40			S13				SILTY SAND (SM); wet, dark gray; fine to medium sand; trace wood debris.	40
	70		S14					
45			S15					45
	65		S16				SAND WITH SILT (SP-SM); wet, dark gray; fine to medium sand; few reddish sand grains.	
50		Threaded end cap					Bottom of exploration at 50 ft. bgs.	50

Legend

Continuous core 7" ID

Water Level

Water Level ATD

See Exploration Log Key for explanation of symbols

Logged by: ABM
Approved by: HNH 10/25/2022

Exploration Log
APW-01

Sheet 2 of 2



King County West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St and 2nd Ave SW, Seattle, WA

E: 1269300 N: 200790

APIT-01

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM datum)

Kelly Site Work

Trackhoe

Grab

114.38'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM datum)

Depth to Water (Below GS)

Pat

Excavation

9/22/2022 to 9/23/2022

NA

No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
114											FILL GRAVEL WITH COBBLES (GP); very dense, dry, gray brown; fine to coarse sand; fine to coarse, subangular to subrounded gravel. SANDY SILT (ML); loose, moist, gray; non-plastic; fine sand; trace fine, subangular gravel.	1	
113												2	
112		Backfilled with excavated soil.										3	
111												4	
110		Pilot Infiltration Test (PIT) conducted at 4.5 feet bgs.										5	
109		Continued excavation after falling head portion of PIT.										6	
108		Soil moisture attributed to PIT and not interpreted as groundwater.										7	
107											HOLOCENE ALLUVIUM - Channel Deposits SAND WITH SILT (SP-SM); medium dense, wet, dark gray; fine to medium sand; few reddish sand grains. Bottom of exploration at 7.3 ft. bgs. Note: Test pit sidewalls standing vertically.	8	
106											9		
105												9	

Legend

Grab sample

Plastic Limit — Liquid Limit

No Water Encountered

Water Level

See Exploration Log Key for explanation of symbols

Logged by: SSS
 Approved by: HNH 10/25/2022

Exploration Log
APIT-01

Sheet 1 of 1

NEW STANDARD EXPLORATION LOG TEMPLATE - P:\GINT\PROJECTS\150218 - WEST DUWAMISH CSO.GPJ December 8, 2022



King County West Duwamish CSO - 150218

Geotechnical Exploration Log

Project Address & Site Specific Location

Coordinates (SPN NAD83 ft)

Exploration Number

SW Michigan St and 2nd Ave SW, Seattle, WA

E: 1269300 N: 200630

APIT-02

Contractor

Equipment

Sampling Method

Ground Surface Elev. (KCM datum)

Kelly Site Work

Trackhoe

Grab

113.7'

Operator

Exploration Method(s)

Work Start/Completion Dates

Top of Casing Elev. (KCM datum)

Depth to Water (Below GS)

Pat

Excavation

9/23/2022

NA

No Water Encountered

Depth (feet)	Elev. (feet)	Exploration Notes and Completion Details	Sample Type/ID	Blows/foot					Blows/6'	Tests	Material Type	Description	Depth (ft)
				0	10	20	30	40					
1	113	Backfilled with excavated soil.										FILL GRAVEL WITH COBBLES (GP); very dense, dry, gray brown; fine to coarse sand; fine to coarse, subangular to subrounded gravel; few gravel-sized brick and concrete debris. SANDY SILT (ML); loose, moist, brown; non-plastic; fine sand; trace fine, subangular gravel.	1
2	112												2
3	111												3
4	110												4
5	109	Pilot Infiltration Test (PIT) conducted at 4.5 feet bgs. Excavation unable to be completed below PIT depth due to time constraints.	S-1								Bottom of exploration at 4.5 ft. bgs. Note: Test pit sidewalls standing vertically.	5	
6	108												6
	107												

NEW STANDARD EXPLORATION LOG TEMPLATE P:\GINT\PROJECTS\150218 - WEST DUWAMISH CSO.GPJ December 8, 2022

Legend

Grab sample

Plastic Limit — Liquid Limit

No Water Encountered

Water Level

See Exploration Log Key for explanation of symbols

Logged by: SSS
Approved by: HNH 10/25/2022

Exploration Log
APIT-02

Sheet 1 of 1

Appendix C. Soil and Groundwater Chemical Analytical Data



Analytical Resources, LLC
Analytical Chemists and Consultants

15 June 2022

Zanna Satterwhite
Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle, WA 98104

RE: West Duwamish CSO (150218)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
22E0245

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.

Shelly Fishel, Project Manager



Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)
 www.arilabs.com

ARI Assigned Number: <u>22E0245</u>		Turn-around Requested: <u>Standard</u>			Page: <u>2</u> of <u>2</u>							
ARI Client Company: <u>Aspect Consulting</u>		Phone: <u>316-617-0499</u>			Date:	Ice Present? <u>Y</u>						
Client Contact: <u>Zanna Satterwhite</u>		No. of Coolers: <u>2</u>			Cooler Temps: <u>0.0, 0.7°C</u>							
Client Project Name: <u>West Downmish CSO</u>		Analysis Requested				Notes/Comments						
Client Project #: <u>150218</u>		Samplers: <u>DR13</u>										
Sample ID	Date	Time	Matrix	No. Containers	NUTPH-5x	NUTPH-Dx	VOCs EPA B260	Metals EPA 2008 60201/7471A	SUDCS EPA B2700 SIM LL PAHS	PCBS EPA 8082		
MW-7-11.5	5/12/22	1050	Soil	8	X	X	X	X	X	X		
MW-7-13.5	↓	1105	↓	↓	↓	↓	↓	↓	↓	↓		
MW-8-5.5	↓	1315	↓	↓	↓	↓	↓	↓	↓	↓		
MW-8-9.5	↓	1335	↓	↓	↓	↓	↓	↓	↓	↓		
MW-8-11	↓	1340	↓	↓	↓	↓	↓	↓	↓	↓		
MW-X-XX	5/13/22	0745	Soil	8	↓	↓	↓	↓	↓	↓		
Trip Blank-01	-	-	-	PP 210			X					
Comments/Special Instructions		Relinquished by: (Signature) <u>[Signature]</u>		Received by: (Signature) <u>[Signature]</u>		Relinquished by: (Signature)		Received by: (Signature)				
		Printed Name: <u>Daniel Bebeck</u>		Printed Name: <u>DUNNIBOD</u>		Printed Name:		Printed Name:				
		Company: <u>Aspect</u>		Company: <u>ARI</u>		Company:		Company:				
		Date & Time: <u>5/13/22</u>		Date & Time: <u>05/13/22 16:55</u>		Date & Time:		Date & Time:				

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)
 www.arilabs.com

ARI Assigned Number: 22E0245	Turn-around Requested: Standard	Page: 1 of 2
ARI Client Company: Aspect Consulting	Phone: 316-617-0499	Date: 5/13/22 Ice Present? Y
Client Contact: Zanna Setto White	No. of Coolers: 2	Cooler Temps: 0.0, 0.7°C

Client Project Name: West Downamish CSO	Analysis Requested	Notes/Comments
Client Project #: 150218 Samplers: DRB		

Sample ID	Date	Time	Matrix	No. Containers	TPH-SX NUTPH-GY	NUTPH-DX	VOCs by 8160	Metals EPA 200.8/100.4 + THFIA	SUDS EPA 8210-D SIM-LL PAHs	PCBs EPA 8082
MW-4-4.5	5/13/22	1200	Soil	8	X	X	X	X	X	X
MW-4-9.5	↓	1220	↓	8	↓	↓	↓	↓	↓	↓
MW-4-12.5		1230		8						
MW-5-5.5		0725		↓						
MW-5-10.5		0740		↓						
MW-5-13		0750		↓						
MW-6-5.0		1000		↓						
MW-6-12		1030		↓						
MW-6-14	↓	1040	↓	↓	↓	↓	↓	↓	↓	↓
MW-7-4.5	5/12/22	1020	↓	↓	↓	↓	↓	↓	↓	↓

Comments/Special Instructions	Relinquished by: (Signature) <i>[Signature]</i>	Received by: (Signature) <i>[Signature]</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Daniel Babcock	Printed Name: DUNN HAD	Printed Name:	Printed Name:
	Company: Aspect Consulting	Company: ARI	Company:	Company:
	Date & Time: 5/13/22	Date & Time: 05/13/22 1655	Date & Time:	Date & Time:

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-4-4.5	22E0245-01	Solid	13-May-2022 12:00	13-May-2022 16:55
MW-4-9.5	22E0245-02	Solid	13-May-2022 12:20	13-May-2022 16:55
MW-4-12.5	22E0245-03	Solid	13-May-2022 12:30	13-May-2022 16:55
MW-5-5.5	22E0245-04	Solid	13-May-2022 07:25	13-May-2022 16:55
MW-5-10.5	22E0245-05	Solid	13-May-2022 07:40	13-May-2022 16:55
MW-5-13	22E0245-06	Solid	13-May-2022 07:50	13-May-2022 16:55
MW-6-5.0	22E0245-07	Solid	13-May-2022 10:00	13-May-2022 16:55
MW-6-12	22E0245-08	Solid	13-May-2022 10:30	13-May-2022 16:55
MW-6-14	22E0245-09	Solid	13-May-2022 10:40	13-May-2022 16:55
MW-7-4.5	22E0245-10	Solid	12-May-2022 10:20	13-May-2022 16:55
MW-7-11.5	22E0245-11	Solid	12-May-2022 10:50	13-May-2022 16:55
MW-7-13.5	22E0245-12	Solid	12-May-2022 11:05	13-May-2022 16:55
MW-8-5.5	22E0245-13	Solid	12-May-2022 13:15	13-May-2022 16:55
MW-8-9.5	22E0245-14	Solid	12-May-2022 13:35	13-May-2022 16:55
MW-8-11	22E0245-15	Solid	12-May-2022 13:40	13-May-2022 16:55
MW-X-XX	22E0245-16	Solid	13-May-2022 07:45	13-May-2022 16:55
Trip Blank-01	22E0245-17	Solid	12-May-2022 00:00	13-May-2022 16:55



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Work Order Case Narrative

Client: Aspect Consulting, LLC.
Project: West Duwamish CSO
Project Number: 150218
Work Order: 22E0245

Revised Report - June 15, 2022

This report was revised to correct sample date and time for MW-4-4.5 (22E0245-01).

Sample receipt

Sample(s) as listed on the preceding page were received 13-May-2022 16:55 under ARI work order 22E0245. For details regarding sample receipt, please refer to the Cooler Receipt Form.

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except Aroclors 1254 and 1260 which were out of control high on column zb-35. Data reported from passing column zb-5.

Internal standard areas were within limits except Hexabromobiphenyl which was out of control low in samples 22E0245-01, 22E0245-12 and the matrix spike duplicate on column zb-35. Data reported from passing column zb-5.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Semivolatiles - EPA Method SW8270E

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except Pentachlorophenol which was out of control low and 2-Nitroaniline and Pyrene which were out of control high. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

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The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits except Isophorone, 4-Chloro-3-Methylphenol and 2-Chlorophenol which were out of control high. Deviations have been flagged.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270E-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except surrogate Dibenzo(a,h)anthracene-d-14 which was out of control high in the initial calibration verification. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits except Anthracene and Benzo(a)pyrene which were out of control low. Deviations have been flagged.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Total Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The the duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries were within control limits except Antimony which was out of control low. The MS/MSD relative percent difference (RPD) were within advisory control limits. Deviations have been flagged.

Total Mercury - EPA Method 7470/7471

The sample(s) were digested and analyzed within the recommended holding times.



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The the duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.



Cooler Receipt Form

ARI Client: Aspect
 COC No(s): _____ NA
 Assigned ARI Job No: 22E0245

Project Name: West Duwamish C80
 Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
 Tracking No: _____ NA

Preliminary Examination Phase:

Were in tact, properly signed and dated custody seals attached to the outside of the cooler? YES NO
 Were custody papers included with the cooler? YES NO
 Were custody papers properly filled out (ink, signed, etc.) YES NO
 Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1655
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 9708

Cooler Accepted by: SD Date: 05/13/22 Time: 1655

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
 What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
 Was sufficient ice used (if appropriate)? NA YES NO
 How were bottles sealed in plastic bags? Individually Grouped Not
 Did all bottles arrive in good condition (unbroken)? YES NO
 Were all bottle labels complete and legible? YES NO
 Did the number of containers listed on COC match with the number of containers received? YES NO
 Did all bottle labels and tags agree with custody papers? YES NO
 Were all bottles used correct for the requested analyses? YES NO
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO
 Were all VOC vials free of air bubbles? NA YES NO
 Was sufficient amount of sample sent in each bottle? YES NO
 Date VOC Trip Blank was made at ARI NA 2/4/2022
 Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: [Signature] Date: 05/14/22 Time: _____ Labels checked by: _____

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC
MW-6-13 40Z	MW-6-14		
MW-6-13 80Z	MW-6-14		

Additional Notes, Discrepancies, & Resolutions:

Only 7 containers for MW-7-13.5, missing 40 mL MeOH pres vial.

By: _____ Date: _____



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-4.5
22E0245-01 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 12:00

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 12:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-01 A
Preparation Batch: BKE0480 Sample Size: 2.77 g (wet) Dry Weight: 1.94 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 70.14

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.98	2.57	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.86	2.57	ND	ug/kg	U
Bromomethane	74-83-9	1	1.00	2.57	ND	ug/kg	U
Chloroethane	75-00-3	1	3.20	5.15	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	2.51	5.15	ND	ug/kg	U
Acrolein	107-02-8	1	4.51	12.9	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	2.18	5.15	ND	ug/kg	U
Acetone	67-64-1	1	16.3	25.7	178	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.95	2.57	ND	ug/kg	U
Iodomethane	74-88-4	1	2.33	2.57	ND	ug/kg	U
Methylene Chloride	75-09-2	1	11.2	12.9	ND	ug/kg	U
Acrylonitrile	107-13-1	1	5.09	12.9	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.85	2.57	1.48	ug/kg	J
trans-1,2-Dichloroethene	156-60-5	1	1.35	2.57	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	8.37	12.9	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.73	2.57	ND	ug/kg	U
2-Butanone	78-93-3	1	6.28	12.9	ND	ug/kg	U
2,2-Dichloropropane	594-20-7	1	0.79	2.57	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.66	2.57	ND	ug/kg	U
Chloroform	67-66-3	1	0.74	2.57	ND	ug/kg	U
Bromochloromethane	74-97-5	1	1.02	2.57	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	1.54	2.57	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.73	2.57	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.80	2.57	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.60	2.57	ND	ug/kg	U
Benzene	71-43-2	1	0.42	2.57	ND	ug/kg	U
Trichloroethene	79-01-6	1	0.66	2.57	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.85	2.57	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.66	2.57	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.92	2.57	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	7.76	12.9	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	3.51	12.9	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.67	2.57	ND	ug/kg	U
Toluene	108-88-3	1	0.64	2.57	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-4.5
22E0245-01 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 12:00

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 12:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	1.06	2.57	ND	ug/kg	U
2-Hexanone	591-78-6	1	3.27	12.9	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.69	2.57	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.60	2.57	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.51	2.57	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.69	2.57	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.79	2.57	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.53	2.57	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.58	2.57	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.91	2.57	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	1.27	5.15	ND	ug/kg	U
o-Xylene	95-47-6	1	0.62	2.57	ND	ug/kg	U
Xylenes, total	1330-20-7	1	1.79	5.15	ND	ug/kg	U
Styrene	100-42-5	1	0.63	2.57	ND	ug/kg	U
Bromoform	75-25-2	1	1.19	2.57	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.71	2.57	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	3.86	5.15	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	7.08	12.9	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.61	2.57	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.64	2.57	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.67	2.57	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.56	2.57	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.75	2.57	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.65	2.57	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.65	2.57	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.68	2.57	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.62	2.57	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.75	2.57	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.63	2.57	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	1.11	2.57	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.72	2.57	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	1.68	2.57	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	6.07	12.9	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	4.68	12.9	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	4.63	12.9	ND	ug/kg	U
Naphthalene	91-20-3	1	6.34	12.9	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	5.98	12.9	ND	ug/kg	U



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-4.5
22E0245-01 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 12:00

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 12:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	1.04	2.57	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.65	2.57	ND	ug/kg	U
2-Pentanone	107-87-9	1	5.53	12.9	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-149 %	113	%	
<i>Surrogate: Toluene-d8</i>				77-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	97.7	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	102	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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MW-4-4.5
22E0245-01 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/13/2022 12:00
Instrument: NT2 Analyst: PKC Analyzed: 05/17/2022 15:31

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 5035 (Methanol Extraction)	Extract ID: 22E0245-01 C
	Preparation Batch: BKE0442	Dry Weight: 3.96 g
	Sample Size: 5.645 g (wet)	% Solids: 70.14
	Prepared: 05/17/2022	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	8440	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	104	%	



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Reported:
15-Jun-2022 16:27

MW-4-4.5
22E0245-01 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/13/2022 12:00
Instrument: NT10 Analyst: YZ Analyzed: 06/07/2022 14:07

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Sample Size: 14.26 g (wet)	Extract ID: 22E0245-01 G 02
	Preparation Batch: BKE0465	Final Volume: 1 mL	Dry Weight: 10.00 g
	Prepared: 05/20/2022		% Solids: 70.14
Sample Cleanup:	Cleanup Method: GPC	Initial Volume: 1 uL	Extract ID: 22E0245-01 G 02
	Cleanup Batch: CKF0016	Final Volume: 1 uL	
	Cleaned: 03-Jun-2022		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	ND	ug/kg	U
bis(2-chloroethyl) ether	111-44-4	1	19.3	50.0	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.3	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.7	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.9	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	100	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	100	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.0	200	ND	ug/kg	U
4-Chloroaniline	106-47-8	1	8.4	100	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	100	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.5	100	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	100	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	100	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	8.0	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	100	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-4.5
22E0245-01 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 12:00

Instrument: NT10 Analyst: YZ

Analyzed: 06/07/2022 14:07

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.5	100	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.3	100	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.8	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	100	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	100	ND	ug/kg	U
Fluorene	86-73-7	1	14.6	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	50.0	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	50.0	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.4	100	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	38.0	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	100	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	6.0	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	100	ND	ug/kg	U
Chrysene	218-01-9	1	6.1	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.5	50.0	ND	ug/kg	U
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	40.0	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.3	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	65.7	%	
Surrogate: Phenol-d5				29-120 %	71.6	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-4.5
22E0245-01 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 12:00

Instrument: NT10 Analyst: YZ

Analyzed: 06/07/2022 14:07

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Chlorophenol-d4</i>		31-120 %	86.0	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>		32-120 %	86.1	%	
<i>Surrogate: Nitrobenzene-d5</i>		30-120 %	91.3	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		35-120 %	93.8	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		24-134 %	116	%	
<i>Surrogate: p-Terphenyl-d14</i>		37-120 %	93.4	%	



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-4.5
22E0245-01 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/13/2022 12:00
Instrument: NT11 Analyst: VTS Analyzed: 06/03/2022 17:00

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-01 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.00 g
	Sample Size: 14.26 g (wet)	% Solids: 70.14
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-01 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes	
Naphthalene	91-20-3	1	0.44	0.60	3.64	ug/kg		
1-Methylnaphthalene	90-12-0	1	0.11	0.50	5.15	ug/kg		
2-Methylnaphthalene	91-57-6	1	0.13	0.50	5.34	ug/kg		
Acenaphthylene	208-96-8	1	0.06	0.50	0.11	ug/kg	J	
Acenaphthene	83-32-9	1	0.09	0.50	0.14	ug/kg	J	
Dibenzofuran	132-64-9	1	0.13	0.50	1.82	ug/kg		
Fluorene	86-73-7	1	0.07	0.50	0.45	ug/kg	J	
Phenanthrene	85-01-8	1	0.11	0.50	3.56	ug/kg		
Anthracene	120-12-7	1	0.07	0.50	0.33	ug/kg	J	
Fluoranthene	206-44-0	1	0.08	0.50	1.58	ug/kg		
Pyrene	129-00-0	1	0.09	0.50	2.26	ug/kg		
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.70	ug/kg		
Chrysene	218-01-9	1	0.07	0.50	1.69	ug/kg		
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	0.91	ug/kg		
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.29	ug/kg	J	
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	0.24	ug/kg	J	
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.52	ug/kg		
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.44	ug/kg	J	
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	0.18	ug/kg	J	
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	1.38	ug/kg		
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	57.2	%	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	58.5	%	Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	62.9	%	



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MW-4-4.5
22E0245-01 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/13/2022 12:00
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 18:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-01 G 01
Preparation Batch: BKE0386 Sample Size: 10.01 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 7.02 g
% Solids: 70.14

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	7.12	ND	mg/kg	U
Motor Oil Range Organics (C24-C38)	RRO	1	14.2	27.1	mg/kg	
HC ID: MOTOR OIL						
Surrogate: <i>o</i> -Terphenyl			50-150 %	95.7	%	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-4.5
22E0245-01 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/13/2022 12:00
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 11:39

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 17.84 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-01 G 04 Dry Weight: 12.51 g % Solids: 70.14
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleaned: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-01 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-01 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-01 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	3.9	ug/kg	J
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U
<i>Surrogate: Decachlorobiphenyl</i>					40-126 %	75.2	%
<i>Surrogate: Tetrachlorometaxylene</i>					44-120 %	74.9	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					40-126 %		NRS NRS
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					44-120 %	72.3	%



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Reported:
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MW-4-4.5
22E0245-01 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 05/13/2022 12:00

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/01/2022 20:52

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SWN EPA 3050B

Extract ID: 22E0245-01 F 01

Preparation Batch: BKE0677

Sample Size: 1.056 g (wet)

Dry Weight: 0.82 g

Prepared: 05/25/2022

Final Volume: 50 mL

% Solids: 77.25

Analyte	CAS Number	Dilution	Detection		Reporting		Result	Units	Notes
			Limit	Limit	Limit	Limit			
Antimony	7440-36-0	20	0.13	0.25	ND	mg/kg		U	
Beryllium	7440-41-7	20	0.02	0.25	0.41	mg/kg			
Chromium	7440-47-3	20	0.32	0.61	57.2	mg/kg			
Lead	7439-92-1	20	0.06	0.12	5.13	mg/kg			
Silver	7440-22-4	20	0.03	0.25	0.11	mg/kg		J	
Thallium	7440-28-0	20	0.03	0.25	0.11	mg/kg		J	



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MW-4-4.5
22E0245-01 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/13/2022 12:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 20:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-01 F 01
Preparation Batch: BKE0677 Dry Weight: 0.82 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 77.25

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.05	0.25	3.15	mg/kg	
Cadmium	7440-43-9	20	0.04	0.12	0.14	mg/kg	
Copper	7440-50-8	20	0.21	0.61	43.4	mg/kg	
Nickel	7440-02-0	20	0.10	0.61	83.7	mg/kg	
Selenium	7782-49-2	20	0.22	0.61	0.95	mg/kg	
Zinc	7440-66-6	20	3.6	7.4	81.2	mg/kg	



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MW-4-4.5
22E0245-01 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/13/2022 12:00
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 14:40

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: SMM EPA 7471B	Sample Size: 0.244 g (wet)	Extract ID: 22E0245-01 F
	Preparation Batch: BKE0639	Final Volume: 50 mL	Dry Weight: 0.19 g
	Prepared: 05/25/2022		% Solids: 77.25

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Mercury	7439-97-6	1	0.00557	0.0265	0.0474	mg/kg	



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Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-4.5
22E0245-01RE1 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/13/2022 12:00
Instrument: NT11 Analyst: VTS Analyzed: 06/04/2022 13:06

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-01RE1 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.00 g
	Sample Size: 14.26 g (wet)	% Solids: 70.14
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-01RE1 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.44	0.60	3.54	ug/kg	
1-Methylnaphthalene	90-12-0	1	0.11	0.50	4.91	ug/kg	
2-Methylnaphthalene	91-57-6	1	0.13	0.50	5.08	ug/kg	
Acenaphthylene	208-96-8	1	0.06	0.50	0.11	ug/kg	J
Acenaphthene	83-32-9	1	0.09	0.50	0.13	ug/kg	J
Dibenzofuran	132-64-9	1	0.13	0.50	1.71	ug/kg	
Fluorene	86-73-7	1	0.07	0.50	0.48	ug/kg	J
Phenanthrene	85-01-8	1	0.11	0.50	3.13	ug/kg	
Anthracene	120-12-7	1	0.07	0.50	0.31	ug/kg	J
Fluoranthene	206-44-0	1	0.08	0.50	1.41	ug/kg	
Pyrene	129-00-0	1	0.09	0.50	1.98	ug/kg	
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.65	ug/kg	
Chrysene	218-01-9	1	0.07	0.50	1.52	ug/kg	
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	0.85	ug/kg	
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.25	ug/kg	J
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	0.19	ug/kg	J
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.51	ug/kg	
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.36	ug/kg	J
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	0.14	ug/kg	J
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	1.25	ug/kg	
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	54.9	%
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	55.6	% Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	56.1	%



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-9.5
22E0245-02 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 12:20

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 13:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-02 A
Preparation Batch: BKE0480 Sample Size: 4.3 g (wet) Dry Weight: 2.92 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 67.86

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.65	1.71	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.58	1.71	ND	ug/kg	U
Bromomethane	74-83-9	1	0.67	1.71	ND	ug/kg	U
Chloroethane	75-00-3	1	2.13	3.43	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.67	3.43	ND	ug/kg	U
Acrolein	107-02-8	1	3.00	8.57	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	1.45	3.43	ND	ug/kg	U
Acetone	67-64-1	1	10.9	17.1	310	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.64	1.71	ND	ug/kg	U
Iodomethane	74-88-4	1	1.55	1.71	ND	ug/kg	U
Methylene Chloride	75-09-2	1	7.47	8.57	7.85	ug/kg	J
Acrylonitrile	107-13-1	1	3.39	8.57	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.57	1.71	4.10	ug/kg	
trans-1,2-Dichloroethene	156-60-5	1	0.90	1.71	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	5.57	8.57	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.48	1.71	ND	ug/kg	U
2-Butanone	78-93-3	1	4.18	8.57	12.5	ug/kg	
2,2-Dichloropropane	594-20-7	1	0.53	1.71	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.44	1.71	ND	ug/kg	U
Chloroform	67-66-3	1	0.49	1.71	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.68	1.71	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	1.02	1.71	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.48	1.71	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.53	1.71	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.40	1.71	ND	ug/kg	U
Benzene	71-43-2	1	0.28	1.71	ND	ug/kg	U
Trichloroethene	79-01-6	1	0.44	1.71	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.57	1.71	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.44	1.71	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.61	1.71	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	5.17	8.57	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	2.34	8.57	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.45	1.71	ND	ug/kg	U
Toluene	108-88-3	1	0.42	1.71	0.58	ug/kg	J



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-9.5
22E0245-02 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 12:20

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 13:01

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.70	1.71	ND	ug/kg	U
2-Hexanone	591-78-6	1	2.18	8.57	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.46	1.71	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.40	1.71	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.34	1.71	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.46	1.71	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.53	1.71	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.35	1.71	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.39	1.71	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.61	1.71	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.85	3.43	ND	ug/kg	U
o-Xylene	95-47-6	1	0.41	1.71	ND	ug/kg	U
Xylenes, total	1330-20-7	1	1.19	3.43	ND	ug/kg	U
Styrene	100-42-5	1	0.42	1.71	ND	ug/kg	U
Bromoform	75-25-2	1	0.79	1.71	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.47	1.71	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	2.57	3.43	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	4.72	8.57	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.40	1.71	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.42	1.71	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.45	1.71	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.37	1.71	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.50	1.71	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.43	1.71	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.43	1.71	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.45	1.71	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.41	1.71	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.50	1.71	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.42	1.71	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.74	1.71	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.48	1.71	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	1.12	1.71	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	4.04	8.57	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.12	8.57	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	3.08	8.57	ND	ug/kg	U
Naphthalene	91-20-3	1	4.22	8.57	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	3.98	8.57	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-9.5
22E0245-02 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 12:20

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 13:01

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.69	1.71	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.44	1.71	ND	ug/kg	U
2-Pentanone	107-87-9	1	3.68	8.57	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-149 %	116	%	
<i>Surrogate: Toluene-d8</i>				77-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	102	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	102	%	



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MW-4-9.5
22E0245-02 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/13/2022 12:20
Instrument: NT2 Analyst: PKC Analyzed: 05/17/2022 15:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Methanol Extraction) Extract ID: 22E0245-02 D
Preparation Batch: BKE0442 Sample Size: 4.639 g (wet)
Prepared: 05/17/2022 Final Volume: 5 mL Dry Weight: 3.15 g
% Solids: 67.86

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	10300	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.9	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	103	%	



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Project Manager: Zanna Satterwhite

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MW-4-9.5
22E0245-02 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/13/2022 12:20
Instrument: NT10 Analyst: VTS Analyzed: 06/07/2022 14:47

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Sample Size: 14.76 g (wet)	Extract ID: 22E0245-02 G 02
	Preparation Batch: BKE0465	Final Volume: 1 mL	Dry Weight: 10.02 g
	Prepared: 05/20/2022		% Solids: 67.86
Sample Cleanup:	Cleanup Method: GPC	Initial Volume: 1 uL	Extract ID: 22E0245-02 G 02
	Cleanup Batch: CKF0016	Final Volume: 1 uL	
	Cleaned: 03-Jun-2022		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	4.6	ug/kg	J
bis(2-chloroethyl) ether	111-44-4	1	19.3	49.9	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.2	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.6	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.9	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	99.8	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	99.8	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.0	200	62.9	ug/kg	J
4-Chloroaniline	106-47-8	1	8.4	99.8	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	99.8	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.4	99.8	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	99.8	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	99.8	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	7.9	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	99.8	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



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Project Manager: Zanna Satterwhite

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MW-4-9.5
22E0245-02 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 12:20

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 14:47

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.4	99.8	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.2	99.8	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.8	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	99.8	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	99.8	ND	ug/kg	U
Fluorene	86-73-7	1	14.5	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	49.9	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	49.9	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.4	99.8	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	37.9	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	99.8	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	6.0	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	99.8	ND	ug/kg	U
Chrysene	218-01-9	1	6.1	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.5	49.9	ND	ug/kg	U
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	39.9	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.3	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	62.3	%	
Surrogate: Phenol-d5				29-120 %	64.5	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-4-9.5
22E0245-02 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 12:20

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 14:47

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: 2-Chlorophenol-d4		31-120 %	77.6	%	
Surrogate: 1,2-Dichlorobenzene-d4		32-120 %	77.5	%	
Surrogate: Nitrobenzene-d5		30-120 %	84.4	%	
Surrogate: 2-Fluorobiphenyl		35-120 %	83.9	%	
Surrogate: 2,4,6-Tribromophenol		24-134 %	110	%	
Surrogate: p-Terphenyl-d14		37-120 %	80.1	%	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-4-9.5
22E0245-02 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/13/2022 12:20
Instrument: NT11 Analyst: VTS Analyzed: 06/03/2022 17:32

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-02 G 03
	Preparation Batch: BKE0466	Dry Weight: 9.99 g
	Sample Size: 14.72 g (wet)	% Solids: 67.86
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-02 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes	
Naphthalene	91-20-3	1	0.44	0.60	0.51	ug/kg	J	
1-Methylnaphthalene	90-12-0	1	0.11	0.50	1.20	ug/kg		
2-Methylnaphthalene	91-57-6	1	0.13	0.50	0.85	ug/kg		
Acenaphthylene	208-96-8	1	0.06	0.50	0.07	ug/kg	J	
Acenaphthene	83-32-9	1	0.09	0.50	0.39	ug/kg	J	
Dibenzofuran	132-64-9	1	0.13	0.50	0.55	ug/kg		
Fluorene	86-73-7	1	0.07	0.50	0.36	ug/kg	J	
Phenanthrene	85-01-8	1	0.11	0.50	2.80	ug/kg		
Anthracene	120-12-7	1	0.07	0.50	0.15	ug/kg	J	
Fluoranthene	206-44-0	1	0.08	0.50	0.58	ug/kg		
Pyrene	129-00-0	1	0.09	0.50	1.21	ug/kg		
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.31	ug/kg	J	
Chrysene	218-01-9	1	0.07	0.50	0.96	ug/kg		
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	0.47	ug/kg	J	
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.13	ug/kg	J	
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	0.11	ug/kg	J	
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.21	ug/kg	J	
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.24	ug/kg	J	
Dibenzo(a,h)anthracene	53-70-3	1	0.11	0.50	0.12	ug/kg	J	
Benzo(g,h,i)perylene	191-24-2	1	0.09	0.50	0.41	ug/kg	J	
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	52.4	%	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	70.5	%	Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	55.6	%	



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MW-4-9.5
22E0245-02 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/13/2022 12:20
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 18:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-02 G 01
Preparation Batch: BKE0386 Sample Size: 10.02 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 6.80 g
% Solids: 67.86

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	7.35	ND	mg/kg	U
Motor Oil Range Organics (C24-C38)	RRO	1	14.7	37.1	mg/kg	
HC ID: MOTOR OIL						
Surrogate: <i>o</i> -Terphenyl			50-150 %	98.0	%	



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MW-4-9.5
22E0245-02 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/13/2022 12:20
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 12:00

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 18.42 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-02 G 04 Dry Weight: 12.50 g % Solids: 67.86
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleansed: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-02 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleansed: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-02 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleansed: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-02 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U

Surrogate: Decachlorobiphenyl	40-126 %	76.4 %
Surrogate: Tetrachlorometaxylene	44-120 %	68.1 %
Surrogate: Decachlorobiphenyl [2C]	40-126 %	80.1 %
Surrogate: Tetrachlorometaxylene [2C]	44-120 %	65.7 %



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MW-4-9.5
22E0245-02 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/13/2022 12:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 20:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-02 F 01
Preparation Batch: BKE0677 Sample Size: 1.02 g (wet)
Prepared: 05/25/2022 Final Volume: 50 mL Dry Weight: 0.72 g
% Solids: 70.94

Analyte	CAS Number	Dilution	Detection		Reporting		Result	Units	Notes
			Limit	Limit	Limit	Limit			
Antimony	7440-36-0	20	0.14	0.28	ND	mg/kg		U	
Beryllium	7440-41-7	20	0.02	0.28	0.25	mg/kg		J	
Chromium	7440-47-3	20	0.36	0.69	14.7	mg/kg			
Lead	7439-92-1	20	0.07	0.14	3.11	mg/kg			
Silver	7440-22-4	20	0.03	0.28	0.07	mg/kg		J	
Thallium	7440-28-0	20	0.03	0.28	0.06	mg/kg		J	



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MW-4-9.5
22E0245-02 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/13/2022 12:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 20:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-02 F 01
Preparation Batch: BKE0677 Dry Weight: 0.72 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 70.94

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.05	0.28	4.62	mg/kg	
Cadmium	7440-43-9	20	0.04	0.14	ND	mg/kg	U
Copper	7440-50-8	20	0.24	0.69	24.1	mg/kg	
Nickel	7440-02-0	20	0.11	0.69	11.6	mg/kg	
Selenium	7782-49-2	20	0.25	0.69	1.01	mg/kg	
Zinc	7440-66-6	20	4.0	8.3	28.2	mg/kg	



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MW-4-9.5
22E0245-02 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/13/2022 12:20
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 14:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SMM EPA 7471B Extract ID: 22E0245-02 F
Preparation Batch: BKE0639 Dry Weight: 0.19 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 70.94

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Mercury	7439-97-6	1	0.00546	0.0260	0.0229	mg/kg	J



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Project Manager: Zanna Satterwhite

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MW-4-9.5
22E0245-02RE1 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 05/13/2022 12:20

Instrument: NT11 Analyst: VTS

Analyzed: 06/04/2022 13:38

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-02RE1 G 03
	Preparation Batch: BKE0466	Dry Weight: 9.99 g
	Sample Size: 14.72 g (wet)	% Solids: 67.86
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-02RE1 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.44	0.60	0.50	ug/kg	J
1-Methylnaphthalene	90-12-0	1	0.11	0.50	1.03	ug/kg	
2-Methylnaphthalene	91-57-6	1	0.13	0.50	0.81	ug/kg	
Acenaphthylene	208-96-8	1	0.06	0.50	0.08	ug/kg	J
Acenaphthene	83-32-9	1	0.09	0.50	0.25	ug/kg	J
Dibenzofuran	132-64-9	1	0.13	0.50	0.53	ug/kg	
Fluorene	86-73-7	1	0.07	0.50	0.36	ug/kg	J
Phenanthrene	85-01-8	1	0.11	0.50	2.66	ug/kg	
Anthracene	120-12-7	1	0.07	0.50	0.23	ug/kg	J
Fluoranthene	206-44-0	1	0.08	0.50	0.54	ug/kg	
Pyrene	129-00-0	1	0.09	0.50	1.16	ug/kg	
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.29	ug/kg	J
Chrysene	218-01-9	1	0.07	0.50	0.95	ug/kg	
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	0.45	ug/kg	J
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.13	ug/kg	J
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	0.12	ug/kg	J
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.20	ug/kg	J
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.22	ug/kg	J
Dibenzo(a,h)anthracene	53-70-3	1	0.11	0.50	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	0.09	0.50	0.39	ug/kg	J
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	51.5 %	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	69.6 %	Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	51.9 %	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-12.5
22E0245-03 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 12:30

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 13:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-03 A
Preparation Batch: BKE0480 Sample Size: 4.12 g (wet) Dry Weight: 2.26 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 54.92

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.84	2.21	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.74	2.21	ND	ug/kg	U
Bromomethane	74-83-9	1	0.86	2.21	ND	ug/kg	U
Chloroethane	75-00-3	1	2.75	4.42	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	2.15	4.42	ND	ug/kg	U
Acrolein	107-02-8	1	3.87	11.0	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	1.87	4.42	ND	ug/kg	U
Acetone	67-64-1	1	14.0	22.1	205	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.82	2.21	ND	ug/kg	U
Iodomethane	74-88-4	1	2.00	2.21	ND	ug/kg	U
Methylene Chloride	75-09-2	1	9.64	11.0	ND	ug/kg	U
Acrylonitrile	107-13-1	1	4.37	11.0	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.73	2.21	3.98	ug/kg	
trans-1,2-Dichloroethene	156-60-5	1	1.16	2.21	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	7.19	11.0	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.63	2.21	ND	ug/kg	U
2-Butanone	78-93-3	1	5.39	11.0	19.4	ug/kg	
2,2-Dichloropropane	594-20-7	1	0.68	2.21	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.57	2.21	ND	ug/kg	U
Chloroform	67-66-3	1	0.64	2.21	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.87	2.21	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	1.32	2.21	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.62	2.21	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.69	2.21	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.52	2.21	ND	ug/kg	U
Benzene	71-43-2	1	0.36	2.21	ND	ug/kg	U
Trichloroethene	79-01-6	1	0.56	2.21	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.73	2.21	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.57	2.21	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.79	2.21	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	6.66	11.0	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	3.02	11.0	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.58	2.21	ND	ug/kg	U
Toluene	108-88-3	1	0.55	2.21	0.56	ug/kg	J



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-12.5
22E0245-03 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 12:30

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 13:26

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.91	2.21	ND	ug/kg	U
2-Hexanone	591-78-6	1	2.81	11.0	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.59	2.21	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.52	2.21	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.44	2.21	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.59	2.21	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.68	2.21	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.46	2.21	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.50	2.21	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.78	2.21	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	1.09	4.42	ND	ug/kg	U
o-Xylene	95-47-6	1	0.53	2.21	ND	ug/kg	U
Xylenes, total	1330-20-7	1	1.54	4.42	ND	ug/kg	U
Styrene	100-42-5	1	0.54	2.21	ND	ug/kg	U
Bromoform	75-25-2	1	1.02	2.21	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.61	2.21	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	3.31	4.42	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	6.08	11.0	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.52	2.21	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.55	2.21	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.58	2.21	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.48	2.21	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.65	2.21	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.55	2.21	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.56	2.21	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.59	2.21	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.53	2.21	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.64	2.21	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.54	2.21	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.95	2.21	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.62	2.21	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	1.44	2.21	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	5.21	11.0	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	4.02	11.0	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	3.98	11.0	ND	ug/kg	U
Naphthalene	91-20-3	1	5.44	11.0	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	5.13	11.0	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-12.5
22E0245-03 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 12:30

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 13:26

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.89	2.21	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.56	2.21	ND	ug/kg	U
2-Pentanone	107-87-9	1	4.74	11.0	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-149 %	115	%	
<i>Surrogate: Toluene-d8</i>				77-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	98.3	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	101	%	



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MW-4-12.5
22E0245-03 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/13/2022 12:30
Instrument: NT2 Analyst: PKC Analyzed: 05/17/2022 16:13

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 5035 (Methanol Extraction)	Extract ID: 22E0245-03 C
	Preparation Batch: BKE0442	Dry Weight: 4.92 g
	Sample Size: 8.964 g (wet)	% Solids: 54.92
	Prepared: 05/17/2022	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	9180	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	94.7	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-12.5
22E0245-03 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/13/2022 12:30
Instrument: NT10 Analyst: VTS Analyzed: 06/07/2022 15:26

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Sample Size: 18.21 g (wet)	Extract ID: 22E0245-03 G 02
	Preparation Batch: BKE0465	Final Volume: 1 mL	Dry Weight: 10.00 g
	Prepared: 05/20/2022		% Solids: 54.92
Sample Cleanup:	Cleanup Method: GPC	Initial Volume: 1 uL	Extract ID: 22E0245-03 G 02
	Cleanup Batch: CKF0016	Final Volume: 1 uL	
	Cleaned: 03-Jun-2022		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	22.5	ug/kg	
bis(2-chloroethyl) ether	111-44-4	1	19.3	50.0	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.3	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.7	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.9	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	100	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	100	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.0	200	271	ug/kg	
4-Chloroaniline	106-47-8	1	8.4	100	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	100	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.5	100	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	100	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	100	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	8.0	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	100	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-12.5
22E0245-03 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 12:30

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 15:26

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.5	100	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	330	100	ND	ug/kg	U Y1
2,4-Dinitrophenol	51-28-5	1	33.8	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	100	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	100	ND	ug/kg	U
Fluorene	86-73-7	1	14.6	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	50.0	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	50.0	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.4	100	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	38.0	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	100	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	6.0	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	100	ND	ug/kg	U
Chrysene	218-01-9	1	6.1	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.5	50.0	ND	ug/kg	U
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	40.0	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.3	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	61.2	%	
Surrogate: Phenol-d5				29-120 %	66.2	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-12.5
22E0245-03 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 12:30

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 15:26

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Chlorophenol-d4</i>		31-120 %	78.1	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>		32-120 %	78.7	%	
<i>Surrogate: Nitrobenzene-d5</i>		30-120 %	87.2	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		35-120 %	85.5	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		24-134 %	108	%	
<i>Surrogate: p-Terphenyl-d14</i>		37-120 %	93.9	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-12.5
22E0245-03 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM
Instrument: NT11 Analyst: VTS

Sampled: 05/13/2022 12:30
Analyzed: 06/03/2022 18:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Low Level
Preparation Batch: BKE0466 Sample Size: 18.22 g (wet)
Prepared: 05/23/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CKF0003 Initial Volume: 0.5 mL
Cleaned: 02-Jun-2022 Final Volume: 0.5 mL

Extract ID: 22E0245-03 G 03
Dry Weight: 10.01 g
% Solids: 54.92
Extract ID: 22E0245-03 G 03

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.44	0.60	0.61	ug/kg	
1-Methylnaphthalene	90-12-0	1	0.11	0.50	0.66	ug/kg	
2-Methylnaphthalene	91-57-6	1	0.13	0.50	0.81	ug/kg	
Acenaphthylene	208-96-8	1	0.06	0.50	0.07	ug/kg	J
Acenaphthene	83-32-9	1	0.09	0.50	0.23	ug/kg	J
Dibenzofuran	132-64-9	1	0.13	0.50	0.54	ug/kg	
Fluorene	86-73-7	1	0.07	0.50	0.60	ug/kg	
Phenanthrene	85-01-8	1	0.11	0.50	1.88	ug/kg	
Anthracene	120-12-7	1	0.07	0.50	0.55	ug/kg	
Fluoranthene	206-44-0	1	0.08	0.50	0.44	ug/kg	J
Pyrene	129-00-0	1	0.09	0.50	6.17	ug/kg	
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.19	ug/kg	J
Chrysene	218-01-9	1	0.07	0.50	0.68	ug/kg	
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	0.50	ug/kg	J
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.15	ug/kg	J
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	0.10	ug/kg	J
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.18	ug/kg	J
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.35	ug/kg	J
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	0.23	ug/kg	J
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	0.44	ug/kg	J
Surrogate: 2-Methylnaphthalene-d10				30-160 %	54.3	%	
Surrogate: Dibenzo[a,h]anthracene-d14				30-160 %	106	%	Q
Surrogate: Fluoranthene-d10				30-160 %	71.4	%	



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MW-4-12.5
22E0245-03 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/13/2022 12:30
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 18:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-03 G 01
Preparation Batch: BKE0386 Sample Size: 10.01 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 5.50 g
% Solids: 54.92

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24) HC ID: DRO	DRO	1	9.10	24.6	mg/kg	
Motor Oil Range Organics (C24-C38) HC ID: MOTOR OIL	RRO	1	18.2	257	mg/kg	
<i>Surrogate: o-Terphenyl</i>			50-150 %	90.0	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-12.5
22E0245-03 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/13/2022 12:30
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 12:22

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 22.79 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-03 G 04 Dry Weight: 12.52 g % Solids: 54.92
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleared: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-03 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleared: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-03 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleared: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-03 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U
<i>Surrogate: Decachlorobiphenyl</i>					40-126 %	78.5	%
<i>Surrogate: Tetrachlorometaxylene</i>					44-120 %	77.3	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					40-126 %	79.0	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					44-120 %	70.4	%



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-4-12.5
22E0245-03 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 05/13/2022 12:30

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/01/2022 23:24

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SWN EPA 3050B

Extract ID: 22E0245-03 F 01

Preparation Batch: BKE0677

Sample Size: 1.055 g (wet)

Dry Weight: 0.62 g

Prepared: 05/25/2022

Final Volume: 50 mL

% Solids: 59.24

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	20	0.16	0.32	ND	mg/kg	U
Beryllium	7440-41-7	20	0.03	0.32	0.29	mg/kg	J
Chromium	7440-47-3	20	0.42	0.80	14.3	mg/kg	
Lead	7439-92-1	20	0.08	0.16	3.56	mg/kg	
Silver	7440-22-4	20	0.04	0.32	0.10	mg/kg	J
Thallium	7440-28-0	20	0.04	0.32	0.05	mg/kg	J



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MW-4-12.5
22E0245-03 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/13/2022 12:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 23:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-03 F 01
Preparation Batch: BKE0677 Dry Weight: 0.62 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 59.24

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.06	0.32	7.04	mg/kg	
Cadmium	7440-43-9	20	0.05	0.16	ND	mg/kg	U
Copper	7440-50-8	20	0.28	0.80	26.5	mg/kg	
Nickel	7440-02-0	20	0.13	0.80	12.7	mg/kg	
Selenium	7782-49-2	20	0.29	0.80	0.92	mg/kg	
Zinc	7440-66-6	20	4.7	9.6	32.6	mg/kg	



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MW-4-12.5
22E0245-03 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/13/2022 12:30
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 14:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SMM EPA 7471B Extract ID: 22E0245-03 F
Preparation Batch: BKE0639 Dry Weight: 0.15 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 59.24

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Mercury	7439-97-6	1	0.00682	0.0325	0.0222	mg/kg	J



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5.5
22E0245-04 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 07:25

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 13:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-04 A
Preparation Batch: BKE0480 Sample Size: 5.73 g (wet) Dry Weight: 4.41 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 76.98

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.43	1.13	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.38	1.13	ND	ug/kg	U
Bromomethane	74-83-9	1	0.44	1.13	ND	ug/kg	U
Chloroethane	75-00-3	1	1.41	2.27	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.11	2.27	ND	ug/kg	U
Acrolein	107-02-8	1	1.99	5.67	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.96	2.27	ND	ug/kg	U
Acetone	67-64-1	1	7.19	11.3	66.1	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.42	1.13	ND	ug/kg	U
Iodomethane	74-88-4	1	1.03	1.13	ND	ug/kg	U
Methylene Chloride	75-09-2	1	4.94	5.67	ND	ug/kg	U
Acrylonitrile	107-13-1	1	2.24	5.67	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.38	1.13	ND	ug/kg	U
trans-1,2-Dichloroethene	156-60-5	1	0.60	1.13	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	3.69	5.67	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.32	1.13	ND	ug/kg	U
2-Butanone	78-93-3	1	2.77	5.67	ND	ug/kg	U
2,2-Dichloropropane	594-20-7	1	0.35	1.13	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.29	1.13	ND	ug/kg	U
Chloroform	67-66-3	1	0.33	1.13	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.45	1.13	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.68	1.13	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.32	1.13	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.35	1.13	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.27	1.13	ND	ug/kg	U
Benzene	71-43-2	1	0.19	1.13	ND	ug/kg	U
Trichloroethene	79-01-6	1	0.29	1.13	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.38	1.13	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.29	1.13	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.40	1.13	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	3.42	5.67	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	1.55	5.67	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.30	1.13	ND	ug/kg	U
Toluene	108-88-3	1	0.28	1.13	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-5.5
22E0245-04 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 07:25

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 13:52

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.46	1.13	ND	ug/kg	U
2-Hexanone	591-78-6	1	1.44	5.67	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.30	1.13	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.27	1.13	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.22	1.13	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.30	1.13	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.35	1.13	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.23	1.13	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.26	1.13	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.40	1.13	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.56	2.27	ND	ug/kg	U
o-Xylene	95-47-6	1	0.27	1.13	ND	ug/kg	U
Xylenes, total	1330-20-7	1	0.79	2.27	ND	ug/kg	U
Styrene	100-42-5	1	0.28	1.13	ND	ug/kg	U
Bromoform	75-25-2	1	0.52	1.13	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.31	1.13	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	1.70	2.27	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	3.12	5.67	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.27	1.13	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.28	1.13	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.30	1.13	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.24	1.13	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.33	1.13	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.28	1.13	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.29	1.13	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.30	1.13	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.27	1.13	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.33	1.13	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.28	1.13	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.49	1.13	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.32	1.13	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.74	1.13	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	2.68	5.67	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.06	5.67	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.04	5.67	ND	ug/kg	U
Naphthalene	91-20-3	1	2.79	5.67	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	2.63	5.67	ND	ug/kg	U



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-5.5
22E0245-04 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 07:25

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 13:52

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.46	1.13	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.29	1.13	ND	ug/kg	U
2-Pentanone	107-87-9	1	2.43	5.67	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>					<i>80-149 %</i>	<i>120 %</i>	
<i>Surrogate: Toluene-d8</i>					<i>77-120 %</i>	<i>102 %</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>					<i>80-120 %</i>	<i>98.4 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>80-120 %</i>	<i>101 %</i>	



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MW-5-5.5
22E0245-04 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/13/2022 07:25
Instrument: NT2 Analyst: PKC Analyzed: 05/17/2022 16:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Methanol Extraction) Extract ID: 22E0245-04 C
Preparation Batch: BKE0442 Sample Size: 5.585 g (wet)
Prepared: 05/17/2022 Final Volume: 5 mL Dry Weight: 4.30 g
% Solids: 76.98

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	7310	133000	ug/kg	
HC ID: GRO						
Surrogate: Toluene-d8			80-120 %	100	%	
Surrogate: 4-Bromofluorobenzene			78-123 %	117	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5.5
22E0245-04 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/13/2022 07:25
Instrument: NT10 Analyst: VTS Analyzed: 06/07/2022 16:05

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Sample Size: 12.99 g (wet)	Extract ID: 22E0245-04 G 02
	Preparation Batch: BKE0465	Final Volume: 1 mL	Dry Weight: 10.00 g
	Prepared: 05/20/2022		% Solids: 76.98
Sample Cleanup:	Cleanup Method: GPC	Initial Volume: 1 uL	Extract ID: 22E0245-04 G 02
	Cleanup Batch: CKF0016	Final Volume: 1 uL	
	Cleaned: 03-Jun-2022		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	ND	ug/kg	U
bis(2-chloroethyl) ether	111-44-4	1	19.3	50.0	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.9	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.3	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.7	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.5	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.5	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.9	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	100	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	100	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.0	200	ND	ug/kg	U
4-Chloroaniline	106-47-8	1	8.4	100	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	100	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.5	100	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	100	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.8	100	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	8.0	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	100	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-5.5
22E0245-04 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 07:25

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 16:05

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.5	100	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.3	100	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.8	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	100	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	100	ND	ug/kg	U
Fluorene	86-73-7	1	14.6	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.2	50.0	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	50.0	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.4	100	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	38.0	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.3	100	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	6.0	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	100	ND	ug/kg	U
Chrysene	218-01-9	1	6.1	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.5	50.0	ND	ug/kg	U
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	40.0	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.7	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.3	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	60.6	%	
Surrogate: Phenol-d5				29-120 %	63.9	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-5.5
22E0245-04 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 07:25

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 16:05

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Chlorophenol-d4</i>		31-120 %	79.0	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>		32-120 %	81.7	%	
<i>Surrogate: Nitrobenzene-d5</i>		30-120 %	91.2	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		35-120 %	87.3	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		24-134 %	103	%	
<i>Surrogate: p-Terphenyl-d14</i>		37-120 %	83.9	%	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-5.5
22E0245-04 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/13/2022 07:25
Instrument: NT11 Analyst: VTS Analyzed: 06/03/2022 18:37

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-04 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.00 g
	Sample Size: 12.99 g (wet)	% Solids: 76.98
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-04 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.44	0.60	0.75	ug/kg	
1-Methylnaphthalene	90-12-0	1	0.11	0.50	1.08	ug/kg	
2-Methylnaphthalene	91-57-6	1	0.13	0.50	1.22	ug/kg	
Acenaphthylene	208-96-8	1	0.06	0.50	ND	ug/kg	U
Acenaphthene	83-32-9	1	0.09	0.50	3.03	ug/kg	
Dibenzofuran	132-64-9	1	0.13	0.50	1.10	ug/kg	
Fluorene	86-73-7	1	0.07	0.50	2.50	ug/kg	
Phenanthrene	85-01-8	1	0.11	0.50	23.1	ug/kg	
Anthracene	120-12-7	1	0.07	0.50	5.56	ug/kg	
Fluoranthene	206-44-0	1	0.08	0.50	29.0	ug/kg	
Pyrene	129-00-0	1	0.09	0.50	28.0	ug/kg	
Benzo(a)anthracene	56-55-3	1	0.07	0.50	13.0	ug/kg	
Chrysene	218-01-9	1	0.07	0.50	13.5	ug/kg	
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	8.42	ug/kg	
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	6.15	ug/kg	
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	4.86	ug/kg	
Benzo(a)pyrene	50-32-8	1	0.09	0.50	9.59	ug/kg	
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	6.02	ug/kg	
Dibenzo(a,h)anthracene	53-70-3	1	0.11	0.50	2.13	ug/kg	
Benzo(g,h,i)perylene	191-24-2	1	0.09	0.50	7.65	ug/kg	
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	51.5	%
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	97.1	%
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	79.7	%



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MW-5-5.5
22E0245-04 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/13/2022 07:25
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 19:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-04 G 01
Preparation Batch: BKE0386 Sample Size: 10.05 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 7.74 g
% Solids: 76.98

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	6.46	ND	mg/kg	U
Motor Oil Range Organics (C24-C38)	RRO	1	12.9	ND	mg/kg	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	97.5	%	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-5.5
22E0245-04 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/13/2022 07:25
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 12:43

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 16.27 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-04 G 04 Dry Weight: 12.52 g % Solids: 76.98
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleared: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-04 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleared: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-04 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleared: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-04 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U
<i>Surrogate: Decachlorobiphenyl</i>					40-126 %	80.9	%
<i>Surrogate: Tetrachlorometaxylene</i>					44-120 %	71.6	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					40-126 %	95.0	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					44-120 %	69.8	%



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MW-5-5.5
22E0245-04 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/13/2022 07:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 21:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-04 F 01
Preparation Batch: BKE0677 Sample Size: 1.002 g (wet)
Prepared: 05/25/2022 Final Volume: 50 mL Dry Weight: 0.77 g
% Solids: 77.34

Analyte	CAS Number	Dilution	Detection		Reporting		Result	Units	Notes
			Limit	Limit	Limit	Limit			
Antimony	7440-36-0	20	0.13	0.26	0.13	0.26	ND	mg/kg	U
Beryllium	7440-41-7	20	0.02	0.26	0.02	0.26	0.27	mg/kg	
Chromium	7440-47-3	20	0.34	0.65	0.34	0.65	43.6	mg/kg	
Lead	7439-92-1	20	0.07	0.13	0.07	0.13	3.73	mg/kg	
Silver	7440-22-4	20	0.03	0.26	0.03	0.26	0.07	mg/kg	J
Thallium	7440-28-0	20	0.03	0.26	0.03	0.26	0.07	mg/kg	J



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MW-5-5.5
22E0245-04 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/13/2022 07:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 21:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-04 F 01
Preparation Batch: BKE0677 Dry Weight: 0.77 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 77.34

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.05	0.26	4.77	mg/kg	
Cadmium	7440-43-9	20	0.04	0.13	0.11	mg/kg	J
Copper	7440-50-8	20	0.22	0.65	28.4	mg/kg	
Nickel	7440-02-0	20	0.10	0.65	65.1	mg/kg	
Selenium	7782-49-2	20	0.23	0.65	0.72	mg/kg	
Zinc	7440-66-6	20	3.8	7.7	53.6	mg/kg	



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MW-5-5.5
22E0245-04 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/13/2022 07:25
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 14:51

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: SMM EPA 7471B	Sample Size: 0.277 g (wet)	Extract ID: 22E0245-04 F
	Preparation Batch: BKE0639	Final Volume: 50 mL	Dry Weight: 0.21 g
	Prepared: 05/25/2022		% Solids: 77.34

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Mercury	7439-97-6	1	0.00490	0.0233	0.0265	mg/kg	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-10.5
22E0245-05 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 07:40

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 14:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-05 A
Preparation Batch: BKE0480 Sample Size: 5.36 g (wet) Dry Weight: 3.71 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 69.25

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.51	1.35	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.45	1.35	ND	ug/kg	U
Bromomethane	74-83-9	1	0.52	1.35	ND	ug/kg	U
Chloroethane	75-00-3	1	1.68	2.69	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.31	2.69	ND	ug/kg	U
Acrolein	107-02-8	1	2.36	6.74	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	1.14	2.69	ND	ug/kg	U
Acetone	67-64-1	1	8.55	13.5	98.3	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.50	1.35	ND	ug/kg	U
Iodomethane	74-88-4	1	1.22	1.35	ND	ug/kg	U
Methylene Chloride	75-09-2	1	5.87	6.74	5.94	ug/kg	J
Acrylonitrile	107-13-1	1	2.66	6.74	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.45	1.35	1.93	ug/kg	
trans-1,2-Dichloroethene	156-60-5	1	0.71	1.35	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	4.38	6.74	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.38	1.35	ND	ug/kg	U
2-Butanone	78-93-3	1	3.29	6.74	4.67	ug/kg	J
2,2-Dichloropropane	594-20-7	1	0.41	1.35	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.35	1.35	ND	ug/kg	U
Chloroform	67-66-3	1	0.39	1.35	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.53	1.35	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.81	1.35	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.38	1.35	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.42	1.35	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.32	1.35	ND	ug/kg	U
Benzene	71-43-2	1	0.22	1.35	0.44	ug/kg	J
Trichloroethene	79-01-6	1	0.34	1.35	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.45	1.35	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.35	1.35	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.48	1.35	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	4.06	6.74	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	1.84	6.74	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.35	1.35	ND	ug/kg	U
Toluene	108-88-3	1	0.33	1.35	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-10.5
22E0245-05 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 07:40

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 14:17

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.55	1.35	ND	ug/kg	U
2-Hexanone	591-78-6	1	1.71	6.74	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.36	1.35	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.32	1.35	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.27	1.35	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.36	1.35	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.41	1.35	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.28	1.35	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.31	1.35	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.48	1.35	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.67	2.69	ND	ug/kg	U
o-Xylene	95-47-6	1	0.32	1.35	ND	ug/kg	U
Xylenes, total	1330-20-7	1	0.94	2.69	ND	ug/kg	U
Styrene	100-42-5	1	0.33	1.35	ND	ug/kg	U
Bromoform	75-25-2	1	0.62	1.35	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.37	1.35	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	2.02	2.69	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	3.71	6.74	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.32	1.35	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.33	1.35	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.35	1.35	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.29	1.35	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.39	1.35	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.34	1.35	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.34	1.35	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.36	1.35	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.32	1.35	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.39	1.35	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.33	1.35	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.58	1.35	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.38	1.35	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.88	1.35	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	3.18	6.74	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.45	6.74	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.42	6.74	ND	ug/kg	U
Naphthalene	91-20-3	1	3.32	6.74	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	3.13	6.74	ND	ug/kg	U



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-10.5
22E0245-05 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 07:40

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 14:17

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.54	1.35	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.34	1.35	ND	ug/kg	U
2-Pentanone	107-87-9	1	2.89	6.74	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-149 %	112	%	
<i>Surrogate: Toluene-d8</i>				77-120 %	103	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	99.2	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	99.2	%	



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MW-5-10.5
22E0245-05 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/13/2022 07:40
Instrument: NT2 Analyst: PKC Analyzed: 05/17/2022 16:55

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 5035 (Methanol Extraction)	Extract ID: 22E0245-05 C
	Preparation Batch: BKE0442	Dry Weight: 3.34 g
	Sample Size: 4.816 g (wet)	% Solids: 69.25
	Prepared: 05/17/2022	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	9720	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	103	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-10.5
22E0245-05 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 07:40

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 16:44

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Sample Size: 14.46 g (wet)	Extract ID: 22E0245-05 G 02
	Preparation Batch: BKE0465	Final Volume: 1 mL	Dry Weight: 10.01 g
	Prepared: 05/20/2022		% Solids: 69.25
Sample Cleanup:	Cleanup Method: GPC	Initial Volume: 1 uL	Extract ID: 22E0245-05 G 02
	Cleanup Batch: CKF0016	Final Volume: 1 uL	
	Cleaned: 03-Jun-2022		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	ND	ug/kg	U
bis(2-chloroethyl) ether	111-44-4	1	19.3	49.9	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.2	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.7	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.9	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	99.9	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	99.9	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.0	200	ND	ug/kg	U
4-Chloroaniline	106-47-8	1	8.4	99.9	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	99.9	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.4	99.9	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	99.9	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	99.9	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	7.9	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	99.9	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-10.5
22E0245-05 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 07:40

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 16:44

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.5	99.9	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.2	99.9	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.8	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	99.9	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	99.9	ND	ug/kg	U
Fluorene	86-73-7	1	14.6	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	49.9	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	49.9	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.4	99.9	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	37.9	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	99.9	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	6.0	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	99.9	ND	ug/kg	U
Chrysene	218-01-9	1	6.1	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.5	49.9	ND	ug/kg	U
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	39.9	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.3	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	66.2	%	
Surrogate: Phenol-d5				29-120 %	68.1	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-10.5
22E0245-05 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 07:40

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 16:44

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: 2-Chlorophenol-d4		31-120 %	83.0	%	
Surrogate: 1,2-Dichlorobenzene-d4		32-120 %	82.1	%	
Surrogate: Nitrobenzene-d5		30-120 %	91.4	%	
Surrogate: 2-Fluorobiphenyl		35-120 %	89.1	%	
Surrogate: 2,4,6-Tribromophenol		24-134 %	108	%	
Surrogate: p-Terphenyl-d14		37-120 %	85.8	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-10.5
22E0245-05 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/13/2022 07:40
Instrument: NT11 Analyst: VTS Analyzed: 06/03/2022 19:09

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-05 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.03 g
	Sample Size: 14.48 g (wet)	% Solids: 69.25
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-05 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.44	0.60	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	0.11	0.50	0.18	ug/kg	J
2-Methylnaphthalene	91-57-6	1	0.13	0.50	0.16	ug/kg	J
Acenaphthylene	208-96-8	1	0.06	0.50	ND	ug/kg	U
Acenaphthene	83-32-9	1	0.09	0.50	ND	ug/kg	U
Dibenzofuran	132-64-9	1	0.13	0.50	ND	ug/kg	U
Fluorene	86-73-7	1	0.07	0.50	ND	ug/kg	U
Phenanthrene	85-01-8	1	0.11	0.50	0.83	ug/kg	
Anthracene	120-12-7	1	0.07	0.50	0.10	ug/kg	J
Fluoranthene	206-44-0	1	0.08	0.50	0.53	ug/kg	
Pyrene	129-00-0	1	0.09	0.50	0.66	ug/kg	
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.23	ug/kg	J
Chrysene	218-01-9	1	0.07	0.50	0.51	ug/kg	
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	0.32	ug/kg	J
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.10	ug/kg	J
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.12	ug/kg	J
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.13	ug/kg	J
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	0.28	ug/kg	J
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	48.4	%
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	133	% Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	101	%



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MW-5-10.5
22E0245-05 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/13/2022 07:40
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 19:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-05 G 01
Preparation Batch: BKE0386 Sample Size: 10.02 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 6.94 g
% Solids: 69.25

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	7.21	ND	mg/kg	U
Motor Oil Range Organics (C24-C38)	RRO	1	14.4	ND	mg/kg	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	105	%	



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MW-5-10.5
22E0245-05 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/13/2022 07:40
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 13:04

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 18.09 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-05 G 04 Dry Weight: 12.53 g % Solids: 69.25
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleaned: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-05 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-05 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-05 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U

Surrogate: Decachlorobiphenyl	40-126 %	85.6 %
Surrogate: Tetrachlorometaxylene	44-120 %	74.4 %
Surrogate: Decachlorobiphenyl [2C]	40-126 %	106 %
Surrogate: Tetrachlorometaxylene [2C]	44-120 %	69.7 %



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MW-5-10.5
22E0245-05 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/13/2022 07:40
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 21:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-05 F 01
Preparation Batch: BKE0677 Dry Weight: 0.79 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 78.71

Analyte	CAS Number	Dilution	Detection		Reporting		Result	Units	Notes
			Limit	Limit	Limit	Limit			
Antimony	7440-36-0	20	0.13	0.25	ND	mg/kg		U	
Beryllium	7440-41-7	20	0.02	0.25	0.09	mg/kg		J	
Chromium	7440-47-3	20	0.33	0.63	7.90	mg/kg			
Lead	7439-92-1	20	0.07	0.13	1.25	mg/kg			
Silver	7440-22-4	20	0.03	0.25	0.04	mg/kg		J	
Thallium	7440-28-0	20	0.03	0.25	ND	mg/kg		U	



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MW-5-10.5
22E0245-05 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/13/2022 07:40
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 21:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-05 F 01
Preparation Batch: BKE0677 Dry Weight: 0.79 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 78.71

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.05	0.25	1.74	mg/kg	
Cadmium	7440-43-9	20	0.04	0.13	ND	mg/kg	U
Copper	7440-50-8	20	0.22	0.63	10.5	mg/kg	
Nickel	7440-02-0	20	0.10	0.63	5.80	mg/kg	
Selenium	7782-49-2	20	0.23	0.63	0.46	mg/kg	J
Zinc	7440-66-6	20	3.7	7.6	19.1	mg/kg	



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MW-5-10.5
22E0245-05 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/13/2022 07:40
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 14:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SMM EPA 7471B Extract ID: 22E0245-05 F
Preparation Batch: BKE0639 Dry Weight: 0.21 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 78.71

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00494	0.0235	ND	mg/kg	U



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-13
22E0245-06 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 07:50

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-06 A
Preparation Batch: BKE0480 Sample Size: 5.46 g (wet) Dry Weight: 3.49 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 63.84

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.54	1.43	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.48	1.43	ND	ug/kg	U
Bromomethane	74-83-9	1	0.56	1.43	ND	ug/kg	U
Chloroethane	75-00-3	1	1.78	2.87	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.40	2.87	ND	ug/kg	U
Acrolein	107-02-8	1	2.51	7.17	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	1.22	2.87	ND	ug/kg	U
Acetone	67-64-1	1	9.10	14.3	175	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.53	1.43	ND	ug/kg	U
Iodomethane	74-88-4	1	1.30	1.43	ND	ug/kg	U
Methylene Chloride	75-09-2	1	6.26	7.17	7.17	ug/kg	J
Acrylonitrile	107-13-1	1	2.84	7.17	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.47	1.43	2.94	ug/kg	
trans-1,2-Dichloroethene	156-60-5	1	0.75	1.43	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	4.67	7.17	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.41	1.43	ND	ug/kg	U
2-Butanone	78-93-3	1	3.50	7.17	8.16	ug/kg	
2,2-Dichloropropane	594-20-7	1	0.44	1.43	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.37	1.43	ND	ug/kg	U
Chloroform	67-66-3	1	0.41	1.43	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.57	1.43	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.86	1.43	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.40	1.43	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.45	1.43	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.34	1.43	ND	ug/kg	U
Benzene	71-43-2	1	0.24	1.43	0.66	ug/kg	J
Trichloroethene	79-01-6	1	0.37	1.43	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.48	1.43	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.37	1.43	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.51	1.43	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	4.32	7.17	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	1.96	7.17	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.38	1.43	ND	ug/kg	U
Toluene	108-88-3	1	0.35	1.43	0.39	ug/kg	J



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-13
22E0245-06 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 07:50

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 14:43

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.59	1.43	ND	ug/kg	U
2-Hexanone	591-78-6	1	1.82	7.17	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.38	1.43	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.34	1.43	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.28	1.43	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.38	1.43	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.44	1.43	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.30	1.43	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.33	1.43	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.51	1.43	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.71	2.87	ND	ug/kg	U
o-Xylene	95-47-6	1	0.34	1.43	ND	ug/kg	U
Xylenes, total	1330-20-7	1	1.00	2.87	ND	ug/kg	U
Styrene	100-42-5	1	0.35	1.43	ND	ug/kg	U
Bromoform	75-25-2	1	0.66	1.43	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.39	1.43	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	2.15	2.87	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	3.95	7.17	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.34	1.43	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.35	1.43	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.38	1.43	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.31	1.43	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.42	1.43	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.36	1.43	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.36	1.43	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.38	1.43	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.35	1.43	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.42	1.43	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.35	1.43	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.62	1.43	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.40	1.43	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.94	1.43	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	3.39	7.17	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.61	7.17	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.58	7.17	ND	ug/kg	U
Naphthalene	91-20-3	1	3.53	7.17	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	3.33	7.17	ND	ug/kg	U



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-13
22E0245-06 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 07:50

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 14:43

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.58	1.43	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.36	1.43	ND	ug/kg	U
2-Pentanone	107-87-9	1	3.08	7.17	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>					<i>80-149 %</i>	<i>121 %</i>	
<i>Surrogate: Toluene-d8</i>					<i>77-120 %</i>	<i>101 %</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>					<i>80-120 %</i>	<i>97.1 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>80-120 %</i>	<i>100 %</i>	



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MW-5-13
22E0245-06 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/13/2022 07:50
Instrument: NT2 Analyst: PKC Analyzed: 05/17/2022 17:16

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 5035 (Methanol Extraction)	Extract ID: 22E0245-06 D
	Preparation Batch: BKE0442	Dry Weight: 3.50 g
	Sample Size: 5.48 g (wet)	% Solids: 63.84
	Prepared: 05/17/2022	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	9980	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.0	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	100	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-13
22E0245-06 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/13/2022 07:50
Instrument: NT10 Analyst: VTS Analyzed: 06/07/2022 17:23

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Extract ID: 22E0245-06 G 02
	Preparation Batch: BKE0465	Dry Weight: 10.00 g
	Sample Size: 15.66 g (wet)	% Solids: 63.84
	Prepared: 05/20/2022	Final Volume: 1 mL
Sample Cleanup:	Cleanup Method: GPC	Extract ID: 22E0245-06 G 02
	Cleanup Batch: CKF0016	Initial Volume: 1 uL
	Cleaned: 03-Jun-2022	Final Volume: 1 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	6.9	ug/kg	J
bis(2-chloroethyl) ether	111-44-4	1	19.3	50.0	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.9	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.3	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.7	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.5	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.5	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.9	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	100	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	100	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.1	200	181	ug/kg	J
4-Chloroaniline	106-47-8	1	8.4	100	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	100	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.5	100	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	100	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.8	100	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	8.0	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	100	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-5-13
22E0245-06 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 07:50

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 17:23

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.5	100	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.3	100	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.8	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	100	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	100	ND	ug/kg	U
Fluorene	86-73-7	1	14.6	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.2	50.0	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	50.0	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.4	100	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	38.0	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.3	100	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	6.0	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	100	ND	ug/kg	U
Chrysene	218-01-9	1	6.1	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.5	50.0	ND	ug/kg	U
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	40.0	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.7	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.3	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	58.3	%	
Surrogate: Phenol-d5				29-120 %	62.5	%	



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MW-5-13
22E0245-06 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/13/2022 07:50
Instrument: NT10 Analyst: VTS Analyzed: 06/07/2022 17:23

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Chlorophenol-d4</i>		31-120 %	74.0	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>		32-120 %	71.0	%	
<i>Surrogate: Nitrobenzene-d5</i>		30-120 %	84.5	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		35-120 %	82.0	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		24-134 %	107	%	
<i>Surrogate: p-Terphenyl-d14</i>		37-120 %	80.1	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-5-13
22E0245-06 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/13/2022 07:50
Instrument: NT11 Analyst: VTS Analyzed: 06/03/2022 19:41

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-06 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.00 g
	Sample Size: 15.67 g (wet)	% Solids: 63.84
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-06 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes	
Naphthalene	91-20-3	1	0.44	0.60	0.62	ug/kg		
1-Methylnaphthalene	90-12-0	1	0.11	0.50	0.79	ug/kg		
2-Methylnaphthalene	91-57-6	1	0.13	0.50	0.96	ug/kg		
Acenaphthylene	208-96-8	1	0.06	0.50	0.09	ug/kg	J	
Acenaphthene	83-32-9	1	0.09	0.50	0.19	ug/kg	J	
Dibenzofuran	132-64-9	1	0.13	0.50	0.49	ug/kg	J	
Fluorene	86-73-7	1	0.07	0.50	0.55	ug/kg		
Phenanthrene	85-01-8	1	0.11	0.50	2.38	ug/kg		
Anthracene	120-12-7	1	0.07	0.50	0.32	ug/kg	J	
Fluoranthene	206-44-0	1	0.08	0.50	0.52	ug/kg		
Pyrene	129-00-0	1	0.09	0.50	2.58	ug/kg		
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.26	ug/kg	J	
Chrysene	218-01-9	1	0.07	0.50	1.04	ug/kg		
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	0.58	ug/kg		
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.19	ug/kg	J	
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	0.14	ug/kg	J	
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.22	ug/kg	J	
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.25	ug/kg	J	
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	0.37	ug/kg	J	
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	0.42	ug/kg	J	
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	53.8	%	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	97.6	%	Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	60.4	%	



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MW-5-13
22E0245-06 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/13/2022 07:50
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 19:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-06 G 01
Preparation Batch: BKE0386 Sample Size: 10.05 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 6.42 g
% Solids: 63.84

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24) HC ID: DRO	DRO	1	7.79	9.88	mg/kg	
Motor Oil Range Organics (C24-C38) HC ID: MOTOR OIL	RRO	1	15.6	114	mg/kg	
<i>Surrogate: o-Terphenyl</i>			50-150 %	107	%	



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MW-5-13
22E0245-06 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/13/2022 07:50
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 13:25

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 19.58 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-06 G 04 Dry Weight: 12.50 g % Solids: 63.84
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleared: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-06 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleared: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-06 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleared: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-06 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U

Surrogate: Decachlorobiphenyl				40-126 %	79.4	%	
Surrogate: Tetrachlorometaxylene				44-120 %	72.0	%	
Surrogate: Decachlorobiphenyl [2C]				40-126 %	83.1	%	
Surrogate: Tetrachlorometaxylene [2C]				44-120 %	66.9	%	



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MW-5-13
22E0245-06 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/13/2022 07:50
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 21:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-06 F 01
Preparation Batch: BKE0677 Dry Weight: 0.66 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 65.06

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	20	0.16	0.30	ND	mg/kg	U
Beryllium	7440-41-7	20	0.03	0.30	0.23	mg/kg	J
Chromium	7440-47-3	20	0.40	0.76	15.3	mg/kg	
Lead	7439-92-1	20	0.08	0.15	3.56	mg/kg	
Silver	7440-22-4	20	0.03	0.30	0.09	mg/kg	J
Thallium	7440-28-0	20	0.04	0.30	0.09	mg/kg	J



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MW-5-13
22E0245-06 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/13/2022 07:50
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 21:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-06 F 01
Preparation Batch: BKE0677 Sample Size: 1.009 g (wet)
Prepared: 05/25/2022 Final Volume: 50 mL Dry Weight: 0.66 g
% Solids: 65.06

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.06	0.30	5.80	mg/kg	
Cadmium	7440-43-9	20	0.05	0.15	ND	mg/kg	U
Copper	7440-50-8	20	0.27	0.76	28.9	mg/kg	
Nickel	7440-02-0	20	0.12	0.76	10.3	mg/kg	
Selenium	7782-49-2	20	0.27	0.76	0.94	mg/kg	
Zinc	7440-66-6	20	4.4	9.1	26.7	mg/kg	



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MW-5-13
22E0245-06 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/13/2022 07:50
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 14:56

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: SMM EPA 7471B	Sample Size: 0.209 g (wet)	Extract ID: 22E0245-06 F
	Preparation Batch: BKE0639	Final Volume: 50 mL	Dry Weight: 0.14 g
	Prepared: 05/25/2022		% Solids: 65.06

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Mercury	7439-97-6	1	0.00772	0.0368	0.0313	mg/kg	J



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-5.0
22E0245-07 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 10:00

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 15:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-07 A
Preparation Batch: BKE0480 Sample Size: 4.3 g (wet) Dry Weight: 3.98 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 92.51

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.48	1.26	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.42	1.26	ND	ug/kg	U
Bromomethane	74-83-9	1	0.49	1.26	ND	ug/kg	U
Chloroethane	75-00-3	1	1.56	2.51	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.23	2.51	ND	ug/kg	U
Acrolein	107-02-8	1	2.20	6.28	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	1.07	2.51	ND	ug/kg	U
Acetone	67-64-1	1	7.98	12.6	68.0	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.47	1.26	ND	ug/kg	U
Iodomethane	74-88-4	1	1.14	1.26	ND	ug/kg	U
Methylene Chloride	75-09-2	1	5.48	6.28	12.1	ug/kg	
Acrylonitrile	107-13-1	1	2.49	6.28	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.42	1.26	ND	ug/kg	U
trans-1,2-Dichloroethene	156-60-5	1	0.66	1.26	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	4.09	6.28	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.36	1.26	ND	ug/kg	U
2-Butanone	78-93-3	1	3.07	6.28	ND	ug/kg	U
2,2-Dichloropropane	594-20-7	1	0.39	1.26	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.32	1.26	ND	ug/kg	U
Chloroform	67-66-3	1	0.36	1.26	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.50	1.26	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.75	1.26	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.35	1.26	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.39	1.26	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.29	1.26	ND	ug/kg	U
Benzene	71-43-2	1	0.21	1.26	ND	ug/kg	U
Trichloroethene	79-01-6	1	0.32	1.26	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.42	1.26	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.32	1.26	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.45	1.26	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	3.79	6.28	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	1.72	6.28	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.33	1.26	ND	ug/kg	U
Toluene	108-88-3	1	0.31	1.26	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-5.0
22E0245-07 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 10:00

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 15:08

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.52	1.26	ND	ug/kg	U
2-Hexanone	591-78-6	1	1.60	6.28	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.34	1.26	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.29	1.26	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.25	1.26	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.34	1.26	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.39	1.26	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.26	1.26	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.29	1.26	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.44	1.26	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.62	2.51	ND	ug/kg	U
o-Xylene	95-47-6	1	0.30	1.26	ND	ug/kg	U
Xylenes, total	1330-20-7	1	0.88	2.51	ND	ug/kg	U
Styrene	100-42-5	1	0.31	1.26	ND	ug/kg	U
Bromoform	75-25-2	1	0.58	1.26	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.34	1.26	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	1.88	2.51	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	3.46	6.28	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.30	1.26	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.31	1.26	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.33	1.26	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.27	1.26	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.37	1.26	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.32	1.26	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.32	1.26	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.33	1.26	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.30	1.26	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.36	1.26	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.31	1.26	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.54	1.26	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.35	1.26	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.82	1.26	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	2.97	6.28	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.29	6.28	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.26	6.28	ND	ug/kg	U
Naphthalene	91-20-3	1	3.10	6.28	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	2.92	6.28	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-5.0
22E0245-07 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 10:00

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 15:08

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.51	1.26	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.32	1.26	ND	ug/kg	U
2-Pentanone	107-87-9	1	2.70	6.28	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>					<i>80-149 %</i>	<i>121 %</i>	
<i>Surrogate: Toluene-d8</i>					<i>77-120 %</i>	<i>103 %</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>					<i>80-120 %</i>	<i>103 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>80-120 %</i>	<i>104 %</i>	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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MW-6-5.0
22E0245-07 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/13/2022 10:00
Instrument: NT2 Analyst: PKC Analyzed: 05/17/2022 17:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Methanol Extraction) Extract ID: 22E0245-07 C
Preparation Batch: BKE0442 Sample Size: 5.139 g (wet)
Prepared: 05/17/2022 Final Volume: 5 mL Dry Weight: 4.75 g
% Solids: 92.51

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	5660	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	94.0	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	95.7	%	



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-5.0
22E0245-07 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/13/2022 10:00
Instrument: NT10 Analyst: VTS Analyzed: 06/07/2022 18:02

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Sample Size: 10.83 g (wet)	Extract ID: 22E0245-07 G 02
	Preparation Batch: BKE0465	Final Volume: 1 mL	Dry Weight: 10.02 g
	Prepared: 05/20/2022		% Solids: 92.51
Sample Cleanup:	Cleanup Method: GPC	Initial Volume: 1 uL	Extract ID: 22E0245-07 G 02
	Cleanup Batch: CKF0016	Final Volume: 1 uL	
	Cleaned: 03-Jun-2022		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	ND	ug/kg	U
bis(2-chloroethyl) ether	111-44-4	1	19.3	49.9	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.2	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.6	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.9	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	99.8	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	99.8	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.0	200	ND	ug/kg	U
4-Chloroaniline	106-47-8	1	8.4	99.8	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	99.8	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.4	99.8	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	99.8	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	99.8	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	7.9	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	99.8	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-5.0
22E0245-07 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 10:00

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 18:02

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.4	99.8	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.2	99.8	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.7	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	99.8	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	99.8	ND	ug/kg	U
Fluorene	86-73-7	1	14.5	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	49.9	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	49.9	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.4	99.8	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	37.9	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	99.8	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	5.9	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	99.8	ND	ug/kg	U
Chrysene	218-01-9	1	6.0	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.4	49.9	ND	ug/kg	U
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	39.9	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.3	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	66.3	%	
Surrogate: Phenol-d5				29-120 %	69.9	%	



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-5.0
22E0245-07 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 10:00

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 18:02

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Chlorophenol-d4</i>		31-120 %	82.5	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>		32-120 %	83.4	%	
<i>Surrogate: Nitrobenzene-d5</i>		30-120 %	92.4	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		35-120 %	89.8	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		24-134 %	98.0	%	
<i>Surrogate: p-Terphenyl-d14</i>		37-120 %	89.7	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-5.0
22E0245-07 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/13/2022 10:00
Instrument: NT11 Analyst: VTS Analyzed: 06/03/2022 20:13

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-07 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.02 g
	Sample Size: 10.83 g (wet)	% Solids: 92.51
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-07 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.44	0.60	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	0.11	0.50	0.17	ug/kg	J
2-Methylnaphthalene	91-57-6	1	0.13	0.50	0.22	ug/kg	J
Acenaphthylene	208-96-8	1	0.06	0.50	0.10	ug/kg	J
Acenaphthene	83-32-9	1	0.09	0.50	0.12	ug/kg	J
Dibenzofuran	132-64-9	1	0.13	0.50	0.15	ug/kg	J
Fluorene	86-73-7	1	0.07	0.50	0.12	ug/kg	J
Phenanthrene	85-01-8	1	0.11	0.50	0.39	ug/kg	J
Anthracene	120-12-7	1	0.07	0.50	ND	ug/kg	U
Fluoranthene	206-44-0	1	0.08	0.50	0.23	ug/kg	J
Pyrene	129-00-0	1	0.09	0.50	0.26	ug/kg	J
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.10	ug/kg	J
Chrysene	218-01-9	1	0.07	0.50	0.26	ug/kg	J
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	0.17	ug/kg	J
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	ND	ug/kg	U
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.10	ug/kg	J
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	0.14	ug/kg	J
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	51.2	%
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	114	% Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	84.6	%



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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MW-6-5.0
22E0245-07 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/13/2022 10:00
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 20:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-07 G 01
Preparation Batch: BKE0386 Sample Size: 10.03 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 9.28 g
% Solids: 92.51

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	5.39	ND	mg/kg	U
Motor Oil Range Organics (C24-C38)	RRO	1	10.8	ND	mg/kg	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	108	%	



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-5.0
22E0245-07 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/13/2022 10:00
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 13:46

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 13.55 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-07 G 04 Dry Weight: 12.54 g % Solids: 92.51
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleaned: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-07 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-07 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-07 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U
<i>Surrogate: Decachlorobiphenyl</i>					40-126 %	85.5	%
<i>Surrogate: Tetrachlorometaxylene</i>					44-120 %	77.5	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					40-126 %	110	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					44-120 %	74.9	%



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MW-6-5.0
22E0245-07 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/13/2022 10:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 21:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-07 F 01
Preparation Batch: BKE0677 Sample Size: 1.009 g (wet)
Prepared: 05/25/2022 Final Volume: 50 mL Dry Weight: 0.94 g
% Solids: 92.68

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	20	0.11	0.21	ND	mg/kg	U
Beryllium	7440-41-7	20	0.02	0.21	0.09	mg/kg	J
Chromium	7440-47-3	20	0.28	0.53	7.86	mg/kg	
Lead	7439-92-1	20	0.06	0.11	2.07	mg/kg	
Silver	7440-22-4	20	0.02	0.21	0.03	mg/kg	J
Thallium	7440-28-0	20	0.03	0.21	0.03	mg/kg	J



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-5.0
22E0245-07 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 05/13/2022 10:00

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/01/2022 21:20

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SWN EPA 3050B

Extract ID: 22E0245-07 F 01

Preparation Batch: BKE0677

Sample Size: 1.009 g (wet)

Dry Weight: 0.94 g

Prepared: 05/25/2022

Final Volume: 50 mL

% Solids: 92.68

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.04	0.21	1.62	mg/kg	
Cadmium	7440-43-9	20	0.03	0.11	ND	mg/kg	U
Copper	7440-50-8	20	0.19	0.53	8.16	mg/kg	
Nickel	7440-02-0	20	0.09	0.53	6.30	mg/kg	
Selenium	7782-49-2	20	0.19	0.53	0.41	mg/kg	J
Zinc	7440-66-6	20	3.1	6.4	20.3	mg/kg	



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MW-6-5.0
22E0245-07 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/13/2022 10:00
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 14:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SMM EPA 7471B Extract ID: 22E0245-07 F
Preparation Batch: BKE0639 Dry Weight: 0.21 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 92.68

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00506	0.0241	ND	mg/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-12
22E0245-08 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 10:30

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 15:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-08 A
Preparation Batch: BKE0480 Sample Size: 5.03 g (wet) Dry Weight: 4.08 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 81.07

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.46	1.23	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.41	1.23	ND	ug/kg	U
Bromomethane	74-83-9	1	0.48	1.23	ND	ug/kg	U
Chloroethane	75-00-3	1	1.53	2.45	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.20	2.45	ND	ug/kg	U
Acrolein	107-02-8	1	2.15	6.13	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	1.04	2.45	ND	ug/kg	U
Acetone	67-64-1	1	7.78	12.3	93.6	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.45	1.23	ND	ug/kg	U
Iodomethane	74-88-4	1	1.11	1.23	ND	ug/kg	U
Methylene Chloride	75-09-2	1	5.35	6.13	ND	ug/kg	U
Acrylonitrile	107-13-1	1	2.43	6.13	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.41	1.23	8.03	ug/kg	
trans-1,2-Dichloroethene	156-60-5	1	0.64	1.23	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	3.99	6.13	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.35	1.23	ND	ug/kg	U
2-Butanone	78-93-3	1	2.99	6.13	4.20	ug/kg	J
2,2-Dichloropropane	594-20-7	1	0.38	1.23	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.32	1.23	ND	ug/kg	U
Chloroform	67-66-3	1	0.35	1.23	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.48	1.23	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.73	1.23	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.35	1.23	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.38	1.23	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.29	1.23	ND	ug/kg	U
Benzene	71-43-2	1	0.20	1.23	0.47	ug/kg	J
Trichloroethene	79-01-6	1	0.31	1.23	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.41	1.23	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.32	1.23	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.44	1.23	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	3.70	6.13	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	1.67	6.13	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.32	1.23	ND	ug/kg	U
Toluene	108-88-3	1	0.30	1.23	0.37	ug/kg	J



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-12
22E0245-08 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 10:30

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 15:34

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.50	1.23	ND	ug/kg	U
2-Hexanone	591-78-6	1	1.56	6.13	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.33	1.23	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.29	1.23	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.24	1.23	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.33	1.23	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.38	1.23	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.25	1.23	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.28	1.23	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.43	1.23	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.61	2.45	ND	ug/kg	U
o-Xylene	95-47-6	1	0.29	1.23	ND	ug/kg	U
Xylenes, total	1330-20-7	1	0.85	2.45	ND	ug/kg	U
Styrene	100-42-5	1	0.30	1.23	ND	ug/kg	U
Bromoform	75-25-2	1	0.57	1.23	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.34	1.23	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	1.84	2.45	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	3.38	6.13	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.29	1.23	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.30	1.23	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.32	1.23	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.26	1.23	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.36	1.23	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.31	1.23	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.31	1.23	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.32	1.23	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.30	1.23	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.36	1.23	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.30	1.23	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.53	1.23	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.34	1.23	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.80	1.23	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	2.89	6.13	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.23	6.13	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.21	6.13	ND	ug/kg	U
Naphthalene	91-20-3	1	3.02	6.13	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	2.85	6.13	ND	ug/kg	U



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-12
22E0245-08 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 10:30

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 15:34

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.49	1.23	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.31	1.23	ND	ug/kg	U
2-Pentanone	107-87-9	1	2.63	6.13	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				<i>80-149 %</i>	<i>121</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>				<i>77-120 %</i>	<i>104</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>101</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				<i>80-120 %</i>	<i>104</i>	<i>%</i>	



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MW-6-12
22E0245-08 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/13/2022 10:30
Instrument: NT2 Analyst: PKC Analyzed: 05/17/2022 17:58

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 5035 (Methanol Extraction)	Extract ID: 22E0245-08 C
	Preparation Batch: BKE0442	Dry Weight: 3.88 g
	Sample Size: 4.785 g (wet)	% Solids: 81.07
	Prepared: 05/17/2022	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	7610	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.2	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	95.6	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-12
22E0245-08 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/13/2022 10:30
Instrument: NT10 Analyst: VTS Analyzed: 06/07/2022 18:42

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Sample Size: 12.37 g (wet)	Extract ID: 22E0245-08 G 02
	Preparation Batch: BKE0465	Final Volume: 1 mL	Dry Weight: 10.03 g
	Prepared: 05/20/2022		% Solids: 81.07
Sample Cleanup:	Cleanup Method: GPC	Initial Volume: 1 uL	Extract ID: 22E0245-08 G 02
	Cleanup Batch: CKF0016	Final Volume: 1 uL	
	Cleaned: 03-Jun-2022		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	19.9	ND	ug/kg	U
bis(2-chloroethyl) ether	111-44-4	1	19.2	49.9	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	19.9	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	19.9	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	19.9	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	19.9	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.2	19.9	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	19.9	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.6	19.9	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	19.9	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	19.9	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	19.9	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	19.9	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	19.9	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.8	19.9	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	99.7	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	19.9	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	99.7	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	19.9	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	19.9	ND	ug/kg	U
Benzoic acid	65-85-0	1	38.9	199	ND	ug/kg	U
4-Chloroaniline	106-47-8	1	8.4	99.7	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	19.9	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	99.7	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	19.9	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.4	99.7	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	99.7	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	99.7	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	7.9	19.9	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	99.7	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	19.9	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-12
22E0245-08 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 10:30

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 18:42

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	19.9	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.4	99.7	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	19.9	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.2	99.7	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.7	199	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	19.9	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.5	99.7	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	99.7	ND	ug/kg	U
Fluorene	86-73-7	1	14.5	19.9	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	49.9	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	49.9	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.3	99.7	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	37.9	199	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	19.9	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	19.9	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.4	19.9	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	99.7	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	19.9	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	19.9	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	19.9	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	19.9	10.8	ug/kg	J
Fluoranthene	206-44-0	1	6.1	19.9	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	19.9	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	19.9	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	5.9	19.9	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	99.7	ND	ug/kg	U
Chrysene	218-01-9	1	6.0	19.9	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.4	49.9	13.0	ug/kg	J
Di-n-Octylphthalate	117-84-0	1	4.4	19.9	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	39.9	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	19.9	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	19.9	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	19.9	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	19.9	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.2	19.9	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	71.6	%	
Surrogate: Phenol-d5				29-120 %	77.1	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-12
22E0245-08 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 10:30

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 18:42

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Chlorophenol-d4</i>		31-120 %	91.9	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>		32-120 %	89.3	%	
<i>Surrogate: Nitrobenzene-d5</i>		30-120 %	100	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		35-120 %	99.3	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		24-134 %	128	%	
<i>Surrogate: p-Terphenyl-d14</i>		37-120 %	98.6	%	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-12
22E0245-08 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/13/2022 10:30
Instrument: NT11 Analyst: VTS Analyzed: 06/03/2022 21:50

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-08 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.00 g
	Sample Size: 12.34 g (wet)	% Solids: 81.07
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-08 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.44	0.60	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	0.11	0.50	0.43	ug/kg	J
2-Methylnaphthalene	91-57-6	1	0.13	0.50	0.49	ug/kg	J
Acenaphthylene	208-96-8	1	0.06	0.50	0.09	ug/kg	J
Acenaphthene	83-32-9	1	0.09	0.50	ND	ug/kg	U
Dibenzofuran	132-64-9	1	0.13	0.50	0.28	ug/kg	J
Fluorene	86-73-7	1	0.07	0.50	0.18	ug/kg	J
Phenanthrene	85-01-8	1	0.11	0.50	1.53	ug/kg	
Anthracene	120-12-7	1	0.07	0.50	0.23	ug/kg	J
Fluoranthene	206-44-0	1	0.08	0.50	2.05	ug/kg	
Pyrene	129-00-0	1	0.09	0.50	2.04	ug/kg	
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.85	ug/kg	
Chrysene	218-01-9	1	0.07	0.50	1.43	ug/kg	
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	1.12	ug/kg	
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.60	ug/kg	
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	0.37	ug/kg	J
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.61	ug/kg	
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.71	ug/kg	
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	0.39	ug/kg	J
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	1.15	ug/kg	
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	63.0 %	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	118 %	Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	92.4 %	



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MW-6-12
22E0245-08 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/13/2022 10:30
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 20:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-08 G 01
Preparation Batch: BKE0386 Sample Size: 10.04 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 8.14 g
% Solids: 81.07

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	6.14	ND	mg/kg	U
Motor Oil Range Organics (C24-C38)	RRO	1	12.3	ND	mg/kg	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	116	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-12
22E0245-08 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/13/2022 10:30
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 14:07

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 15.43 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-08 G 04 Dry Weight: 12.51 g % Solids: 81.07
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleaned: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-08 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-08 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-08 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	1.8	ug/kg	J
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U
<i>Surrogate: Decachlorobiphenyl</i>					40-126 %	79.2	%
<i>Surrogate: Tetrachlorometaxylene</i>					44-120 %	77.1	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					40-126 %	94.5	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					44-120 %	72.5	%



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MW-6-12
22E0245-08 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/13/2022 10:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 21:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-08 F 01
Preparation Batch: BKE0677 Dry Weight: 0.85 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 81.48

Analyte	CAS Number	Dilution	Detection		Reporting		Result	Units	Notes
			Limit	Limit	Limit	Limit			
Antimony	7440-36-0	20	0.12	0.24	ND	mg/kg		U	
Beryllium	7440-41-7	20	0.02	0.24	0.10	mg/kg		J	
Chromium	7440-47-3	20	0.31	0.59	10.1	mg/kg			
Lead	7439-92-1	20	0.06	0.12	3.08	mg/kg			
Silver	7440-22-4	20	0.03	0.24	0.04	mg/kg		J	
Thallium	7440-28-0	20	0.03	0.24	ND	mg/kg		U	



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MW-6-12
22E0245-08 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/13/2022 10:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 21:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-08 F 01
Preparation Batch: BKE0677 Dry Weight: 0.85 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 81.48

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.04	0.24	1.73	mg/kg	
Cadmium	7440-43-9	20	0.04	0.12	ND	mg/kg	U
Copper	7440-50-8	20	0.20	0.59	10.8	mg/kg	
Nickel	7440-02-0	20	0.09	0.59	6.60	mg/kg	
Selenium	7782-49-2	20	0.21	0.59	0.46	mg/kg	J
Zinc	7440-66-6	20	3.4	7.1	21.1	mg/kg	



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MW-6-12
22E0245-08 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/13/2022 10:30
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 15:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SMM EPA 7471B Extract ID: 22E0245-08 F
Preparation Batch: BKE0639 Dry Weight: 0.18 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 81.48

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Mercury	7439-97-6	1	0.00588	0.0280	ND	mg/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-14
22E0245-09 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 10:40

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 15:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-09 A
Preparation Batch: BKE0480 Sample Size: 4.9 g (wet) Dry Weight: 3.35 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 68.41

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.57	1.49	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.50	1.49	ND	ug/kg	U
Bromomethane	74-83-9	1	0.58	1.49	ND	ug/kg	U
Chloroethane	75-00-3	1	1.86	2.98	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.45	2.98	ND	ug/kg	U
Acrolein	107-02-8	1	2.61	7.46	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	1.26	2.98	ND	ug/kg	U
Acetone	67-64-1	1	9.46	14.9	123	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.55	1.49	ND	ug/kg	U
Iodomethane	74-88-4	1	1.35	1.49	ND	ug/kg	U
Methylene Chloride	75-09-2	1	6.50	7.46	ND	ug/kg	U
Acrylonitrile	107-13-1	1	2.95	7.46	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.49	1.49	5.58	ug/kg	
trans-1,2-Dichloroethene	156-60-5	1	0.78	1.49	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	4.85	7.46	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.42	1.49	ND	ug/kg	U
2-Butanone	78-93-3	1	3.64	7.46	5.55	ug/kg	J
2,2-Dichloropropane	594-20-7	1	0.46	1.49	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.38	1.49	ND	ug/kg	U
Chloroform	67-66-3	1	0.43	1.49	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.59	1.49	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.89	1.49	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.42	1.49	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.47	1.49	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.35	1.49	ND	ug/kg	U
Benzene	71-43-2	1	0.25	1.49	ND	ug/kg	U
Trichloroethene	79-01-6	1	0.38	1.49	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.50	1.49	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.38	1.49	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.53	1.49	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	4.50	7.46	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	2.04	7.46	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.39	1.49	ND	ug/kg	U
Toluene	108-88-3	1	0.37	1.49	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-14
22E0245-09 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 10:40

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 15:59

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.61	1.49	ND	ug/kg	U
2-Hexanone	591-78-6	1	1.90	7.46	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.40	1.49	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.35	1.49	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.30	1.49	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.40	1.49	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.46	1.49	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.31	1.49	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.34	1.49	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.53	1.49	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.74	2.98	ND	ug/kg	U
o-Xylene	95-47-6	1	0.36	1.49	ND	ug/kg	U
Xylenes, total	1330-20-7	1	1.04	2.98	ND	ug/kg	U
Styrene	100-42-5	1	0.37	1.49	ND	ug/kg	U
Bromoform	75-25-2	1	0.69	1.49	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.41	1.49	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	2.23	2.98	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	4.11	7.46	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.35	1.49	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.37	1.49	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.39	1.49	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.32	1.49	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.44	1.49	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.37	1.49	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.38	1.49	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.40	1.49	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.36	1.49	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.43	1.49	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.36	1.49	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.64	1.49	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.42	1.49	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.97	1.49	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	3.52	7.46	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.71	7.46	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.68	7.46	ND	ug/kg	U
Naphthalene	91-20-3	1	3.67	7.46	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	3.47	7.46	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-14
22E0245-09 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 10:40

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 15:59

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.60	1.49	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.38	1.49	ND	ug/kg	U
2-Pentanone	107-87-9	1	3.20	7.46	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-149 %	114	%	
<i>Surrogate: Toluene-d8</i>				77-120 %	103	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	103	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	103	%	



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MW-6-14
22E0245-09 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/13/2022 10:40
Instrument: NT2 Analyst: PKC Analyzed: 05/17/2022 18:18

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 5035 (Methanol Extraction)	Extract ID: 22E0245-09 C
	Preparation Batch: BKE0442	Dry Weight: 3.05 g
	Sample Size: 4.465 g (wet)	% Solids: 68.41
	Prepared: 05/17/2022	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	10500	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	94.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	93.6	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-14
22E0245-09 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/13/2022 10:40
Instrument: NT10 Analyst: VTS Analyzed: 06/07/2022 19:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-09 G 02
Preparation Batch: BKE0465 Sample Size: 14.68 g (wet)
Prepared: 05/20/2022 Final Volume: 1 mL Dry Weight: 10.04 g
% Solids: 68.41

Sample Cleanup: Cleanup Method: GPC Extract ID: 22E0245-09 G 02
Cleanup Batch: CKF0016 Initial Volume: 1 uL
Cleaned: 03-Jun-2022 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	19.9	5.1	ug/kg	J
bis(2-chloroethyl) ether	111-44-4	1	19.2	49.8	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	19.9	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	19.9	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	19.9	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	19.9	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.2	19.9	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	19.9	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.6	19.9	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	19.9	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	19.9	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	19.9	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	19.9	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	19.9	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.8	19.9	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	99.6	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	19.9	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	99.6	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	19.9	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	19.9	ND	ug/kg	U
Benzoic acid	65-85-0	1	38.9	199	89.9	ug/kg	J
4-Chloroaniline	106-47-8	1	8.3	99.6	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	19.9	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	99.6	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	19.9	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.4	99.6	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	8.9	99.6	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.6	99.6	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	7.9	19.9	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	99.6	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	19.9	ND	ug/kg	U



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-14
22E0245-09 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 10:40

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 19:21

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	19.9	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.4	99.6	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	19.9	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.2	99.6	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.7	199	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	19.9	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.5	99.6	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.1	99.6	ND	ug/kg	U
Fluorene	86-73-7	1	14.5	19.9	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	49.8	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.6	49.8	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.3	99.6	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	37.8	199	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	19.9	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	16.9	19.9	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.4	19.9	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.1	99.6	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	19.9	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	19.9	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	19.9	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	19.9	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	19.9	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	19.9	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	19.9	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	5.9	19.9	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	99.6	ND	ug/kg	U
Chrysene	218-01-9	1	6.0	19.9	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.4	49.8	ND	ug/kg	U
Di-n-Octylphthalate	117-84-0	1	4.4	19.9	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	39.8	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	19.9	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	19.9	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	19.9	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.5	19.9	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.2	19.9	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	53.1	%	
Surrogate: Phenol-d5				29-120 %	59.7	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-14
22E0245-09 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 10:40

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 19:21

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: 2-Chlorophenol-d4		31-120 %	71.2	%	
Surrogate: 1,2-Dichlorobenzene-d4		32-120 %	71.2	%	
Surrogate: Nitrobenzene-d5		30-120 %	77.6	%	
Surrogate: 2-Fluorobiphenyl		35-120 %	75.8	%	
Surrogate: 2,4,6-Tribromophenol		24-134 %	100	%	
Surrogate: p-Terphenyl-d14		37-120 %	75.1	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-14
22E0245-09 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/13/2022 10:40
Instrument: NT11 Analyst: VTS Analyzed: 06/03/2022 22:22

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-09 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.03 g
	Sample Size: 14.66 g (wet)	% Solids: 68.41
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-09 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes	
Naphthalene	91-20-3	1	0.44	0.60	3.00	ug/kg		
1-Methylnaphthalene	90-12-0	1	0.11	0.50	1.30	ug/kg		
2-Methylnaphthalene	91-57-6	1	0.13	0.50	1.72	ug/kg		
Acenaphthylene	208-96-8	1	0.06	0.50	1.56	ug/kg		
Acenaphthene	83-32-9	1	0.09	0.50	3.18	ug/kg		
Dibenzofuran	132-64-9	1	0.13	0.50	2.53	ug/kg		
Fluorene	86-73-7	1	0.07	0.50	7.88	ug/kg		
Phenanthrene	85-01-8	1	0.11	0.50	49.5	ug/kg		
Anthracene	120-12-7	1	0.07	0.50	12.3	ug/kg		
Fluoranthene	206-44-0	1	0.08	0.50	89.4	ug/kg	E	
Pyrene	129-00-0	1	0.09	0.50	73.4	ug/kg	E	
Benzo(a)anthracene	56-55-3	1	0.07	0.50	17.0	ug/kg		
Chrysene	218-01-9	1	0.07	0.50	30.1	ug/kg		
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	9.29	ug/kg		
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	4.91	ug/kg		
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	3.99	ug/kg		
Benzo(a)pyrene	50-32-8	1	0.09	0.50	4.45	ug/kg		
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	3.34	ug/kg		
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	0.66	ug/kg		
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	3.68	ug/kg		
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	58.0	%	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	118	%	Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	77.8	%	



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MW-6-14
22E0245-09 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/13/2022 10:40
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 20:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-09 G 01
Preparation Batch: BKE0386 Sample Size: 10 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 6.84 g
% Solids: 68.41

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	7.31	ND	mg/kg	U
Motor Oil Range Organics (C24-C38)	RRO	1	14.6	68.2	mg/kg	
HC ID: MOTOR OIL						
<i>Surrogate: o-Terphenyl</i>			50-150 %	103	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-14
22E0245-09 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/13/2022 10:40
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 14:28

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 18.28 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-09 G 04 Dry Weight: 12.51 g % Solids: 68.41
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleaned: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-09 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-09 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-09 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U
<i>Surrogate: Decachlorobiphenyl</i>					40-126 %	84.8	%
<i>Surrogate: Tetrachlorometaxylene</i>					44-120 %	79.3	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					40-126 %	92.1	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					44-120 %	74.4	%



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-14
22E0245-09 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 05/13/2022 10:40

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/01/2022 21:49

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SWN EPA 3050B

Extract ID: 22E0245-09 F 01

Preparation Batch: BKE0677

Sample Size: 1.088 g (wet)

Dry Weight: 0.78 g

Prepared: 05/25/2022

Final Volume: 50 mL

% Solids: 72.07

Analyte	CAS Number	Dilution	Detection		Reporting		Result	Units	Notes
			Limit	Limit	Limit	Limit			
Antimony	7440-36-0	20	0.13	0.26	0.13	0.26	ND	mg/kg	U
Beryllium	7440-41-7	20	0.02	0.26	0.02	0.26	0.50	mg/kg	
Chromium	7440-47-3	20	0.33	0.64	0.33	0.64	14.4	mg/kg	
Lead	7439-92-1	20	0.07	0.13	0.07	0.13	3.01	mg/kg	
Silver	7440-22-4	20	0.03	0.26	0.03	0.26	0.06	mg/kg	J
Thallium	7440-28-0	20	0.03	0.26	0.03	0.26	0.06	mg/kg	J



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MW-6-14
22E0245-09 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/13/2022 10:40
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 21:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-09 F 01
Preparation Batch: BKE0677 Dry Weight: 0.78 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 72.07

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.05	0.26	3.75	mg/kg	
Cadmium	7440-43-9	20	0.04	0.13	0.08	mg/kg	J
Copper	7440-50-8	20	0.22	0.64	22.0	mg/kg	
Nickel	7440-02-0	20	0.10	0.64	28.5	mg/kg	
Selenium	7782-49-2	20	0.23	0.64	1.26	mg/kg	
Zinc	7440-66-6	20	3.7	7.7	71.7	mg/kg	



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MW-6-14
22E0245-09 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/13/2022 10:40
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 15:03

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: SMM EPA 7471B	Sample Size: 0.236 g (wet)	Extract ID: 22E0245-09 F
	Preparation Batch: BKE0639	Final Volume: 50 mL	Dry Weight: 0.17 g
	Prepared: 05/25/2022		% Solids: 72.07

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Mercury	7439-97-6	1	0.00617	0.0294	0.0240	mg/kg	J



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Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-6-14
22E0245-09RE1 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/13/2022 10:40
Instrument: NT11 Analyst: VTS Analyzed: 06/04/2022 14:11

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-09RE1 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.03 g
	Sample Size: 14.66 g (wet)	% Solids: 68.41
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-09RE1 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	3	1.31	1.79	2.87	ug/kg	D
1-Methylnaphthalene	90-12-0	3	0.32	1.50	1.17	ug/kg	J, D
2-Methylnaphthalene	91-57-6	3	0.38	1.50	1.59	ug/kg	D
Acenaphthylene	208-96-8	3	0.19	1.50	1.50	ug/kg	D
Acenaphthene	83-32-9	3	0.27	1.50	3.08	ug/kg	D
Dibenzofuran	132-64-9	3	0.38	1.50	2.37	ug/kg	D
Fluorene	86-73-7	3	0.20	1.50	7.59	ug/kg	D
Phenanthrene	85-01-8	3	0.34	1.50	57.4	ug/kg	D
Anthracene	120-12-7	3	0.22	1.50	12.4	ug/kg	D
Fluoranthene	206-44-0	3	0.24	1.50	133	ug/kg	D
Pyrene	129-00-0	3	0.27	1.50	87.5	ug/kg	D
Benzo(a)anthracene	56-55-3	3	0.22	1.50	18.6	ug/kg	D
Chrysene	218-01-9	3	0.21	1.50	30.8	ug/kg	D
Benzo(b)fluoranthene	205-99-2	3	0.20	1.50	9.08	ug/kg	D
Benzo(k)fluoranthene	207-08-9	3	0.30	1.50	4.69	ug/kg	D
Benzo(j)fluoranthene	205-82-3	3	0.29	1.50	3.75	ug/kg	D
Benzo(a)pyrene	50-32-8	3	0.26	1.50	4.25	ug/kg	D
Indeno(1,2,3-cd)pyrene	193-39-5	3	0.26	1.50	2.93	ug/kg	D
Dibenzo(a,h)anthracene	53-70-3	3	0.31	1.50	0.61	ug/kg	J, D
Benzo(g,h,i)perylene	191-24-2	3	0.25	1.50	3.43	ug/kg	D
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	57.0	%
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	109	% Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	92.6	%



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-4.5
22E0245-10 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 10:20

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 16:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-10 A
Preparation Batch: BKE0480 Sample Size: 3.85 g (wet) Dry Weight: 3.55 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 92.11

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.53	1.41	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.47	1.41	ND	ug/kg	U
Bromomethane	74-83-9	1	0.55	1.41	ND	ug/kg	U
Chloroethane	75-00-3	1	1.75	2.82	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.37	2.82	ND	ug/kg	U
Acrolein	107-02-8	1	2.47	7.05	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	1.20	2.82	ND	ug/kg	U
Acetone	67-64-1	1	8.95	14.1	74.7	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.52	1.41	ND	ug/kg	U
Iodomethane	74-88-4	1	1.28	1.41	ND	ug/kg	U
Methylene Chloride	75-09-2	1	6.15	7.05	7.29	ug/kg	
Acrylonitrile	107-13-1	1	2.79	7.05	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.47	1.41	ND	ug/kg	U
trans-1,2-Dichloroethene	156-60-5	1	0.74	1.41	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	4.59	7.05	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.40	1.41	ND	ug/kg	U
2-Butanone	78-93-3	1	3.44	7.05	ND	ug/kg	U
2,2-Dichloropropane	594-20-7	1	0.43	1.41	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.36	1.41	ND	ug/kg	U
Chloroform	67-66-3	1	0.41	1.41	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.56	1.41	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.84	1.41	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.40	1.41	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.44	1.41	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.33	1.41	ND	ug/kg	U
Benzene	71-43-2	1	0.23	1.41	ND	ug/kg	U
Trichloroethene	79-01-6	1	0.36	1.41	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.47	1.41	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.36	1.41	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.50	1.41	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	4.25	7.05	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	1.92	7.05	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.37	1.41	ND	ug/kg	U
Toluene	108-88-3	1	0.35	1.41	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-4.5
22E0245-10 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 10:20

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 16:25

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.58	1.41	ND	ug/kg	U
2-Hexanone	591-78-6	1	1.79	7.05	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.38	1.41	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.33	1.41	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.28	1.41	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.38	1.41	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.43	1.41	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.29	1.41	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.32	1.41	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.50	1.41	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.70	2.82	ND	ug/kg	U
o-Xylene	95-47-6	1	0.34	1.41	ND	ug/kg	U
Xylenes, total	1330-20-7	1	0.98	2.82	ND	ug/kg	U
Styrene	100-42-5	1	0.35	1.41	ND	ug/kg	U
Bromoform	75-25-2	1	0.65	1.41	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.39	1.41	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	2.11	2.82	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	3.88	7.05	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.33	1.41	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.35	1.41	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.37	1.41	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.30	1.41	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.41	1.41	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.35	1.41	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.36	1.41	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.37	1.41	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.34	1.41	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.41	1.41	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.34	1.41	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.61	1.41	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.39	1.41	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.92	1.41	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	3.33	7.05	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.56	7.05	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.54	7.05	ND	ug/kg	U
Naphthalene	91-20-3	1	3.47	7.05	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	3.28	7.05	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-4.5
22E0245-10 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 10:20

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 16:25

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.57	1.41	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.36	1.41	ND	ug/kg	U
2-Pentanone	107-87-9	1	3.03	7.05	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-149 %	123	%	
<i>Surrogate: Toluene-d8</i>				77-120 %	105	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	102	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	104	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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MW-7-4.5
22E0245-10 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/12/2022 10:20
Instrument: NT2 Analyst: PKC Analyzed: 05/17/2022 18:39

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 5035 (Methanol Extraction)	Extract ID: 22E0245-10 C
	Preparation Batch: BKE0442	Dry Weight: 3.87 g
	Sample Size: 4.2 g (wet)	% Solids: 92.11
	Prepared: 05/17/2022	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	6890	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	90.4	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-4.5
22E0245-10 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/12/2022 10:20
Instrument: NT10 Analyst: VTS Analyzed: 06/07/2022 20:00

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Extract ID: 22E0245-10 G 02
	Preparation Batch: BKE0465	Dry Weight: 10.02 g
	Sample Size: 10.88 g (wet)	% Solids: 92.11
	Prepared: 05/20/2022	Final Volume: 1 mL
Sample Cleanup:	Cleanup Method: GPC	Extract ID: 22E0245-10 G 02
	Cleanup Batch: CKF0016	Initial Volume: 1 uL
	Cleaned: 03-Jun-2022	Final Volume: 1 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	ND	ug/kg	U
bis(2-chloroethyl) ether	111-44-4	1	19.2	49.9	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.2	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.6	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.8	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	99.8	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	99.8	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.0	200	ND	ug/kg	U
4-Chloroaniline	106-47-8	1	8.4	99.8	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	99.8	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.4	99.8	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	99.8	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	99.8	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	7.9	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	99.8	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-4.5
22E0245-10 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/12/2022 10:20

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 20:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.4	99.8	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.2	99.8	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.7	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	99.8	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	99.8	ND	ug/kg	U
Fluorene	86-73-7	1	14.5	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	49.9	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	49.9	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.3	99.8	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	37.9	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	99.8	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	5.9	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	99.8	ND	ug/kg	U
Chrysene	218-01-9	1	6.0	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.4	49.9	12.4	ug/kg	J
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	39.9	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.2	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	63.6	%	
Surrogate: Phenol-d5				29-120 %	70.3	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-4.5
22E0245-10 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/12/2022 10:20

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 20:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Chlorophenol-d4</i>		31-120 %	84.4	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>		32-120 %	84.6	%	
<i>Surrogate: Nitrobenzene-d5</i>		30-120 %	93.0	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		35-120 %	89.9	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		24-134 %	100	%	
<i>Surrogate: p-Terphenyl-d14</i>		37-120 %	94.3	%	



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Project: West Duwamish CSO
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Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-4.5
22E0245-10 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/12/2022 10:20
Instrument: NT11 Analyst: VTS Analyzed: 06/03/2022 22:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Low Level Extract ID: 22E0245-10 G 03
Preparation Batch: BKE0466 Sample Size: 10.86 g (wet)
Prepared: 05/23/2022 Final Volume: 0.5 mL Dry Weight: 10.00 g
% Solids: 92.11

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22E0245-10 G 03
Cleanup Batch: CKF0003 Initial Volume: 0.5 mL
Cleaned: 02-Jun-2022 Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.44	0.60	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	0.11	0.50	0.14	ug/kg	J
2-Methylnaphthalene	91-57-6	1	0.13	0.50	0.23	ug/kg	J
Acenaphthylene	208-96-8	1	0.06	0.50	ND	ug/kg	U
Acenaphthene	83-32-9	1	0.09	0.50	ND	ug/kg	U
Dibenzofuran	132-64-9	1	0.13	0.50	ND	ug/kg	U
Fluorene	86-73-7	1	0.07	0.50	0.07	ug/kg	J
Phenanthrene	85-01-8	1	0.11	0.50	0.79	ug/kg	
Anthracene	120-12-7	1	0.07	0.50	ND	ug/kg	U
Fluoranthene	206-44-0	1	0.08	0.50	1.17	ug/kg	
Pyrene	129-00-0	1	0.09	0.50	1.62	ug/kg	
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.71	ug/kg	
Chrysene	218-01-9	1	0.07	0.50	2.54	ug/kg	
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	1.33	ug/kg	
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.43	ug/kg	J
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	0.37	ug/kg	J
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.88	ug/kg	
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.77	ug/kg	
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	0.21	ug/kg	J
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	2.17	ug/kg	
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	61.1 %	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	125 %	Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	89.8 %	



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MW-7-4.5
22E0245-10 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/12/2022 10:20
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 21:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-10 G 01
Preparation Batch: BKE0386 Sample Size: 10 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 9.21 g
% Solids: 92.11

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24) HC ID: DRO	DRO	1	5.43	7.88	mg/kg	
Motor Oil Range Organics (C24-C38) HC ID: MOTOR OIL	RRO	1	10.9	57.8	mg/kg	
<i>Surrogate: o-Terphenyl</i>			50-150 %	108	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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MW-7-4.5
22E0245-10 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/12/2022 10:20
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 15:32

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 13.58 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-10 G 04 Dry Weight: 12.51 g % Solids: 92.11
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleaned: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-10 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-10 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-10 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	4.2	ug/kg	
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U
<i>Surrogate: Decachlorobiphenyl</i>					40-126 %	78.7	%
<i>Surrogate: Tetrachlorometaxylene</i>					44-120 %	81.3	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					40-126 %	86.2	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					44-120 %	77.6	%



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-4.5
22E0245-10 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 05/12/2022 10:20

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/01/2022 21:54

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SWN EPA 3050B

Extract ID: 22E0245-10 F 01

Preparation Batch: BKE0677

Sample Size: 1.069 g (wet)

Dry Weight: 0.99 g

Prepared: 05/25/2022

Final Volume: 50 mL

% Solids: 92.33

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	20	0.10	0.20	ND	mg/kg	U
Beryllium	7440-41-7	20	0.02	0.20	0.15	mg/kg	J
Chromium	7440-47-3	20	0.26	0.51	8.67	mg/kg	
Lead	7439-92-1	20	0.05	0.10	3.88	mg/kg	
Silver	7440-22-4	20	0.02	0.20	0.08	mg/kg	J
Thallium	7440-28-0	20	0.02	0.20	0.07	mg/kg	J



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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MW-7-4.5
22E0245-10 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/12/2022 10:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 21:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-10 F 01
Preparation Batch: BKE0677 Dry Weight: 0.99 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 92.33

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.04	0.20	1.85	mg/kg	
Copper	7440-50-8	20	0.18	0.51	14.2	mg/kg	
Nickel	7440-02-0	20	0.08	0.51	7.65	mg/kg	
Selenium	7782-49-2	20	0.18	0.51	0.55	mg/kg	
Zinc	7440-66-6	20	3.0	6.1	25.1	mg/kg	

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/02/2022 18:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-10 F 01
Preparation Batch: BKE0677 Dry Weight: 0.99 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 92.33

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Cadmium	7440-43-9	20	0.03	0.10	ND	mg/kg	U



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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MW-7-4.5
22E0245-10 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/12/2022 10:20
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 15:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SMM EPA 7471B Extract ID: 22E0245-10 F
Preparation Batch: BKE0639 Dry Weight: 0.20 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 92.33

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Mercury	7439-97-6	1	0.00519	0.0247	ND	mg/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-11.5
22E0245-11 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 10:50

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 16:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-11 A
Preparation Batch: BKE0480 Sample Size: 5.76 g (wet) Dry Weight: 4.71 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 81.71

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.40	1.06	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.36	1.06	ND	ug/kg	U
Bromomethane	74-83-9	1	0.41	1.06	ND	ug/kg	U
Chloroethane	75-00-3	1	1.32	2.12	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.04	2.12	ND	ug/kg	U
Acrolein	107-02-8	1	1.86	5.31	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.90	2.12	ND	ug/kg	U
Acetone	67-64-1	1	6.74	10.6	65.1	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.39	1.06	ND	ug/kg	U
Iodomethane	74-88-4	1	0.96	1.06	ND	ug/kg	U
Methylene Chloride	75-09-2	1	4.63	5.31	5.41	ug/kg	
Acrylonitrile	107-13-1	1	2.10	5.31	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.35	1.06	9.11	ug/kg	
trans-1,2-Dichloroethene	156-60-5	1	0.56	1.06	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	3.46	5.31	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.30	1.06	ND	ug/kg	U
2-Butanone	78-93-3	1	2.59	5.31	ND	ug/kg	U
2,2-Dichloropropane	594-20-7	1	0.33	1.06	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.27	1.06	ND	ug/kg	U
Chloroform	67-66-3	1	0.31	1.06	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.42	1.06	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.64	1.06	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.30	1.06	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.33	1.06	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.25	1.06	ND	ug/kg	U
Benzene	71-43-2	1	0.18	1.06	ND	ug/kg	U
Trichloroethene	79-01-6	1	0.27	1.06	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.35	1.06	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.27	1.06	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.38	1.06	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	3.20	5.31	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	1.45	5.31	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.28	1.06	ND	ug/kg	U
Toluene	108-88-3	1	0.26	1.06	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-11.5
22E0245-11 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 10:50

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 16:50

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.44	1.06	ND	ug/kg	U
2-Hexanone	591-78-6	1	1.35	5.31	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.28	1.06	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.25	1.06	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.21	1.06	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.28	1.06	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.33	1.06	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.22	1.06	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.24	1.06	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.38	1.06	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.52	2.12	ND	ug/kg	U
o-Xylene	95-47-6	1	0.25	1.06	ND	ug/kg	U
Xylenes, total	1330-20-7	1	0.74	2.12	ND	ug/kg	U
Styrene	100-42-5	1	0.26	1.06	ND	ug/kg	U
Bromoform	75-25-2	1	0.49	1.06	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.29	1.06	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	1.59	2.12	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	2.92	5.31	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.25	1.06	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.26	1.06	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.28	1.06	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.23	1.06	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.31	1.06	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.27	1.06	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.27	1.06	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.28	1.06	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.26	1.06	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.31	1.06	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.26	1.06	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.46	1.06	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.30	1.06	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.69	1.06	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	2.51	5.31	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	1.93	5.31	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.91	5.31	ND	ug/kg	U
Naphthalene	91-20-3	1	2.62	5.31	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	2.47	5.31	ND	ug/kg	U



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-11.5
22E0245-11 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 10:50

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 16:50

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.43	1.06	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.27	1.06	ND	ug/kg	U
2-Pentanone	107-87-9	1	2.28	5.31	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-149 %	123	%	
<i>Surrogate: Toluene-d8</i>				77-120 %	105	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	99.6	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	103	%	



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MW-7-11.5
22E0245-11 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/12/2022 10:50
Instrument: NT2 Analyst: LH Analyzed: 05/18/2022 09:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Methanol Extraction) Extract ID: 22E0245-11 C
Preparation Batch: BKE0457 Sample Size: 5.79 g (wet)
Prepared: 05/18/2022 Final Volume: 5 mL Dry Weight: 4.73 g
% Solids: 81.71

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	6400	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.9	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	96.9	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-11.5
22E0245-11 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/12/2022 10:50
Instrument: NT10 Analyst: VTS Analyzed: 06/07/2022 20:38

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Sample Size: 12.26 g (wet)	Extract ID: 22E0245-11 G 02
	Preparation Batch: BKE0465	Final Volume: 1 mL	Dry Weight: 10.02 g
	Prepared: 05/20/2022		% Solids: 81.71
Sample Cleanup:	Cleanup Method: GPC	Initial Volume: 1 uL	Extract ID: 22E0245-11 G 02
	Cleanup Batch: CKF0016	Final Volume: 1 uL	
	Cleaned: 03-Jun-2022		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	ND	ug/kg	U
bis(2-chloroethyl) ether	111-44-4	1	19.3	49.9	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.2	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.6	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.9	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	99.8	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	99.8	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.0	200	ND	ug/kg	U
4-Chloroaniline	106-47-8	1	8.4	99.8	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	99.8	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.4	99.8	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	99.8	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	99.8	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	7.9	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	99.8	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-11.5
22E0245-11 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/12/2022 10:50

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 20:38

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.4	99.8	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.2	99.8	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.8	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	99.8	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	99.8	ND	ug/kg	U
Fluorene	86-73-7	1	14.5	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	49.9	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	49.9	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.4	99.8	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	37.9	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	99.8	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	5.9	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	99.8	ND	ug/kg	U
Chrysene	218-01-9	1	6.0	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.5	49.9	46.3	ug/kg	J
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	39.9	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.3	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	61.0	%	
Surrogate: Phenol-d5				29-120 %	64.3	%	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-11.5
22E0245-11 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/12/2022 10:50

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 20:38

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
Surrogate: 2-Chlorophenol-d4		31-120 %	78.8	%	
Surrogate: 1,2-Dichlorobenzene-d4		32-120 %	79.0	%	
Surrogate: Nitrobenzene-d5		30-120 %	85.3	%	
Surrogate: 2-Fluorobiphenyl		35-120 %	80.6	%	
Surrogate: 2,4,6-Tribromophenol		24-134 %	95.2	%	
Surrogate: p-Terphenyl-d14		37-120 %	76.9	%	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-11.5
22E0245-11 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 05/12/2022 10:50

Instrument: NT11 Analyst: VTS

Analyzed: 06/03/2022 23:27

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-11 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.00 g
	Sample Size: 12.24 g (wet)	% Solids: 81.71
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-11 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.44	0.60	0.49	ug/kg	J
1-Methylnaphthalene	90-12-0	1	0.11	0.50	0.43	ug/kg	J
2-Methylnaphthalene	91-57-6	1	0.13	0.50	0.56	ug/kg	
Acenaphthylene	208-96-8	1	0.06	0.50	0.07	ug/kg	J
Acenaphthene	83-32-9	1	0.09	0.50	ND	ug/kg	U
Dibenzofuran	132-64-9	1	0.13	0.50	0.23	ug/kg	J
Fluorene	86-73-7	1	0.07	0.50	0.15	ug/kg	J
Phenanthrene	85-01-8	1	0.11	0.50	1.57	ug/kg	
Anthracene	120-12-7	1	0.07	0.50	0.17	ug/kg	J
Fluoranthene	206-44-0	1	0.08	0.50	2.03	ug/kg	
Pyrene	129-00-0	1	0.09	0.50	2.48	ug/kg	
Benzo(a)anthracene	56-55-3	1	0.07	0.50	1.03	ug/kg	
Chrysene	218-01-9	1	0.07	0.50	3.05	ug/kg	
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	1.44	ug/kg	
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.48	ug/kg	J
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	0.45	ug/kg	J
Benzo(a)pyrene	50-32-8	1	0.09	0.50	1.28	ug/kg	
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.73	ug/kg	
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	0.29	ug/kg	J
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	2.45	ug/kg	
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	61.1 %	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	116 %	Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	82.9 %	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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MW-7-11.5
22E0245-11 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/12/2022 10:50
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 22:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-11 G 01
Preparation Batch: BKE0386 Sample Size: 10.05 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 8.21 g
% Solids: 81.71

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24) HC ID: DRO	DRO	1	6.09	8.56	mg/kg	
Motor Oil Range Organics (C24-C38) HC ID: MOTOR OIL	RRO	1	12.2	43.5	mg/kg	
<i>Surrogate: o-Terphenyl</i>			50-150 %	116	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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MW-7-11.5
22E0245-11 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/12/2022 10:50
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 16:56

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 15.32 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-11 G 04 Dry Weight: 12.52 g % Solids: 81.71
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleared: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-11 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleared: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-11 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleared: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-11 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	5.1	ug/kg	
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U

Surrogate: Decachlorobiphenyl	40-126 %	77.5 %
Surrogate: Tetrachlorometaxylene	44-120 %	73.8 %
Surrogate: Decachlorobiphenyl [2C]	40-126 %	83.8 %
Surrogate: Tetrachlorometaxylene [2C]	44-120 %	74.0 %



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MW-7-11.5
22E0245-11 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/12/2022 10:50
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 21:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-11 F 01
Preparation Batch: BKE0677 Dry Weight: 0.81 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 80.17

Analyte	CAS Number	Dilution	Detection		Reporting		Result	Units	Notes
			Limit	Limit	Limit	Limit			
Antimony	7440-36-0	20	0.13	0.25	ND	mg/kg		U	
Beryllium	7440-41-7	20	0.02	0.25	0.11	mg/kg		J	
Chromium	7440-47-3	20	0.32	0.62	8.77	mg/kg			
Lead	7439-92-1	20	0.06	0.12	3.21	mg/kg			
Silver	7440-22-4	20	0.03	0.25	0.04	mg/kg		J	
Thallium	7440-28-0	20	0.03	0.25	ND	mg/kg		U	



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Project: West Duwamish CSO
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Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-11.5
22E0245-11 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 05/12/2022 10:50

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/01/2022 21:59

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SWN EPA 3050B

Extract ID: 22E0245-11 F 01

Preparation Batch: BKE0677

Sample Size: 1.008 g (wet)

Dry Weight: 0.81 g

Prepared: 05/25/2022

Final Volume: 50 mL

% Solids: 80.17

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.05	0.25	1.76	mg/kg	
Cadmium	7440-43-9	20	0.04	0.12	0.04	mg/kg	J
Copper	7440-50-8	20	0.22	0.62	10.6	mg/kg	
Nickel	7440-02-0	20	0.10	0.62	7.25	mg/kg	
Selenium	7782-49-2	20	0.22	0.62	0.41	mg/kg	J
Zinc	7440-66-6	20	3.6	7.4	22.1	mg/kg	



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MW-7-11.5
22E0245-11 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/12/2022 10:50
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 15:08

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: SMM EPA 7471B	Sample Size: 0.256 g (wet)	Extract ID: 22E0245-11 F
	Preparation Batch: BKE0639	Final Volume: 50 mL	Dry Weight: 0.21 g
	Prepared: 05/25/2022		% Solids: 80.17

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Mercury	7439-97-6	1	0.00512	0.0244	ND	mg/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-13.5
22E0245-12 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 11:05

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 17:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-12 A
Preparation Batch: BKE0480 Sample Size: 3.78 g (wet) Dry Weight: 1.82 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 48.27

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	1.04	2.74	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.92	2.74	ND	ug/kg	U
Bromomethane	74-83-9	1	1.07	2.74	ND	ug/kg	U
Chloroethane	75-00-3	1	3.41	5.48	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	2.67	5.48	ND	ug/kg	U
Acrolein	107-02-8	1	4.80	13.7	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	2.32	5.48	ND	ug/kg	U
Acetone	67-64-1	1	17.4	27.4	226	ug/kg	
1,1-Dichloroethene	75-35-4	1	1.02	2.74	ND	ug/kg	U
Iodomethane	74-88-4	1	2.48	2.74	ND	ug/kg	U
Methylene Chloride	75-09-2	1	12.0	13.7	13.1	ug/kg	J
Acrylonitrile	107-13-1	1	5.42	13.7	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.91	2.74	6.14	ug/kg	
trans-1,2-Dichloroethene	156-60-5	1	1.44	2.74	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	8.91	13.7	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.78	2.74	ND	ug/kg	U
2-Butanone	78-93-3	1	6.69	13.7	16.1	ug/kg	
2,2-Dichloropropane	594-20-7	1	0.84	2.74	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.70	2.74	ND	ug/kg	U
Chloroform	67-66-3	1	0.79	2.74	ND	ug/kg	U
Bromochloromethane	74-97-5	1	1.08	2.74	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	1.64	2.74	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.77	2.74	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.85	2.74	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.64	2.74	ND	ug/kg	U
Benzene	71-43-2	1	0.45	2.74	ND	ug/kg	U
Trichloroethene	79-01-6	1	0.70	2.74	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.91	2.74	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.70	2.74	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.98	2.74	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	8.26	13.7	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	3.74	13.7	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.72	2.74	ND	ug/kg	U
Toluene	108-88-3	1	0.68	2.74	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-13.5
22E0245-12 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 11:05

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 17:16

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	1.12	2.74	ND	ug/kg	U
2-Hexanone	591-78-6	1	3.49	13.7	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.73	2.74	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.64	2.74	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.54	2.74	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.73	2.74	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.84	2.74	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.57	2.74	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.62	2.74	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.97	2.74	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	1.35	5.48	ND	ug/kg	U
o-Xylene	95-47-6	1	0.65	2.74	ND	ug/kg	U
Xylenes, total	1330-20-7	1	1.91	5.48	ND	ug/kg	U
Styrene	100-42-5	1	0.67	2.74	ND	ug/kg	U
Bromoform	75-25-2	1	1.27	2.74	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.75	2.74	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	4.10	5.48	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	7.54	13.7	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.65	2.74	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.68	2.74	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.72	2.74	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.59	2.74	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.80	2.74	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.69	2.74	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.69	2.74	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.73	2.74	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.66	2.74	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.79	2.74	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.67	2.74	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	1.18	2.74	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.77	2.74	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	1.79	2.74	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	6.47	13.7	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	4.98	13.7	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	4.93	13.7	ND	ug/kg	U
Naphthalene	91-20-3	1	6.75	13.7	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	6.37	13.7	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-13.5
22E0245-12 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 11:05

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 17:16

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	1.10	2.74	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.70	2.74	ND	ug/kg	U
2-Pentanone	107-87-9	1	5.88	13.7	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				<i>80-149 %</i>	<i>118</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>				<i>77-120 %</i>	<i>104</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>96.2</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				<i>80-120 %</i>	<i>98.8</i>	<i>%</i>	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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MW-7-13.5
22E0245-12 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/12/2022 11:05
Instrument: NT2 Analyst: LH Analyzed: 05/18/2022 10:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Methanol Extraction) Extract ID: 22E0245-12 C
Preparation Batch: BKE0457 Sample Size: 3.759 g (wet)
Prepared: 05/18/2022 Final Volume: 5 mL Dry Weight: 1.81 g
% Solids: 48.27

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	19100	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	94.6	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-13.5
22E0245-12 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/12/2022 11:05

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 21:17

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Sample Size: 20.77 g (wet)	Extract ID: 22E0245-12 F 02
	Preparation Batch: BKE0465	Final Volume: 1 mL	Dry Weight: 10.03 g
	Prepared: 05/20/2022		% Solids: 48.27
Sample Cleanup:	Cleanup Method: GPC	Initial Volume: 1 uL	Extract ID: 22E0245-12 F 02
	Cleanup Batch: CKF0016	Final Volume: 1 uL	
	Cleaned: 03-Jun-2022		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	19.9	11.4	ug/kg	J
bis(2-chloroethyl) ether	111-44-4	1	19.2	49.9	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	19.9	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	19.9	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	19.9	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	19.9	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.2	19.9	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	19.9	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.6	19.9	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	19.9	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	19.9	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	19.9	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	19.9	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	19.9	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.8	19.9	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	99.7	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	19.9	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	99.7	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	19.9	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	19.9	ND	ug/kg	U
Benzoic acid	65-85-0	1	38.9	199	346	ug/kg	
4-Chloroaniline	106-47-8	1	8.4	99.7	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	19.9	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	99.7	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	19.9	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.4	99.7	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	99.7	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	99.7	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	7.9	19.9	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	99.7	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	19.9	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-7-13.5
22E0245-12 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/12/2022 11:05

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 21:17

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	19.9	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.4	99.7	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	19.9	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.2	99.7	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.7	199	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	19.9	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	99.7	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	99.7	ND	ug/kg	U
Fluorene	86-73-7	1	14.5	19.9	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	49.9	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	49.9	37.5	ug/kg	J
4-Nitroaniline	100-01-6	1	29.3	99.7	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	37.9	199	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	19.9	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	19.9	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.4	19.9	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	99.7	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	19.9	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	19.9	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	19.9	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	19.9	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	19.9	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	19.9	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	19.9	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	5.9	19.9	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	99.7	ND	ug/kg	U
Chrysene	218-01-9	1	6.0	19.9	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.4	49.9	ND	ug/kg	U
Di-n-Octylphthalate	117-84-0	1	4.4	19.9	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	39.9	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	19.9	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	19.9	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	19.9	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	19.9	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.2	19.9	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	54.3	%	
Surrogate: Phenol-d5				29-120 %	60.6	%	



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MW-7-13.5
22E0245-12 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/12/2022 11:05
Instrument: NT10 Analyst: VTS Analyzed: 06/07/2022 21:17

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Chlorophenol-d4</i>		31-120 %	71.1	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>		32-120 %	71.1	%	
<i>Surrogate: Nitrobenzene-d5</i>		30-120 %	81.3	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		35-120 %	77.9	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		24-134 %	95.9	%	
<i>Surrogate: p-Terphenyl-d14</i>		37-120 %	78.5	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-7-13.5
22E0245-12 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 05/12/2022 11:05

Instrument: NT11 Analyst: VTS

Analyzed: 06/03/2022 23:59

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-12 F 03
	Preparation Batch: BKE0466	Dry Weight: 10.01 g
	Sample Size: 20.73 g (wet)	% Solids: 48.27
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-12 F 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes	
Naphthalene	91-20-3	1	0.44	0.60	0.83	ug/kg		
1-Methylnaphthalene	90-12-0	1	0.11	0.50	0.41	ug/kg	J	
2-Methylnaphthalene	91-57-6	1	0.13	0.50	1.01	ug/kg		
Acenaphthylene	208-96-8	1	0.06	0.50	0.12	ug/kg	J	
Acenaphthene	83-32-9	1	0.09	0.50	0.13	ug/kg	J	
Dibenzofuran	132-64-9	1	0.13	0.50	0.71	ug/kg		
Fluorene	86-73-7	1	0.07	0.50	0.56	ug/kg		
Phenanthrene	85-01-8	1	0.11	0.50	1.86	ug/kg		
Anthracene	120-12-7	1	0.07	0.50	0.40	ug/kg	J	
Fluoranthene	206-44-0	1	0.08	0.50	0.20	ug/kg	J	
Pyrene	129-00-0	1	0.09	0.50	2.02	ug/kg		
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.21	ug/kg	J	
Chrysene	218-01-9	1	0.07	0.50	0.67	ug/kg		
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	0.51	ug/kg		
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.56	ug/kg		
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	0.10	ug/kg	J	
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.12	ug/kg	J	
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.32	ug/kg	J	
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	0.30	ug/kg	J	
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	0.38	ug/kg	J	
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	51.8	%	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	100	%	Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	33.9	%	



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MW-7-13.5
22E0245-12 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/12/2022 11:05
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 22:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-12 F 01
Preparation Batch: BKE0386 Sample Size: 10.07 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 4.86 g
% Solids: 48.27

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24) HC ID: DRO	DRO	1	10.3	32.3	mg/kg	
Motor Oil Range Organics (C24-C38) HC ID: MOTOR OIL	RRO	1	20.6	322	mg/kg	
<i>Surrogate: o-Terphenyl</i>			50-150 %	103	%	



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MW-7-13.5
22E0245-12 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/12/2022 11:05
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 17:17

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 25.94 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-12 F 04 Dry Weight: 12.52 g % Solids: 48.27
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleaned: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-12 F 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-12 F 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-12 F 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U
<i>Surrogate: Decachlorobiphenyl</i>					40-126 %	77.8	%
<i>Surrogate: Tetrachlorometaxylene</i>					44-120 %	76.3	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					40-126 %		NRS NRS
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					44-120 %	70.1	%



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MW-7-13.5
22E0245-12 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/12/2022 11:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 23:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-12 E 01
Preparation Batch: BKE0677 Dry Weight: 0.54 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 52.81

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	20	0.19	0.37	ND	mg/kg	U
Beryllium	7440-41-7	20	0.03	0.37	0.40	mg/kg	
Chromium	7440-47-3	20	0.48	0.93	21.8	mg/kg	
Lead	7439-92-1	20	0.10	0.19	9.67	mg/kg	
Silver	7440-22-4	20	0.04	0.37	0.17	mg/kg	J
Thallium	7440-28-0	20	0.04	0.37	0.11	mg/kg	J



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MW-7-13.5
22E0245-12 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/12/2022 11:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 23:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-12 E 01
Preparation Batch: BKE0677 Dry Weight: 0.54 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 52.81

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.07	0.37	11.5	mg/kg	
Cadmium	7440-43-9	20	0.06	0.19	0.17	mg/kg	J
Copper	7440-50-8	20	0.32	0.93	54.1	mg/kg	
Nickel	7440-02-0	20	0.15	0.93	18.1	mg/kg	
Selenium	7782-49-2	20	0.34	0.93	1.46	mg/kg	
Zinc	7440-66-6	20	5.4	11.2	47.4	mg/kg	



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MW-7-13.5
22E0245-12 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/12/2022 11:05
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 15:10

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: SMM EPA 7471B	Sample Size: 0.252 g (wet)	Extract ID: 22E0245-12 E
	Preparation Batch: BKE0639	Final Volume: 50 mL	Dry Weight: 0.13 g
	Prepared: 05/25/2022		% Solids: 52.81

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Mercury	7439-97-6	1	0.00789	0.0376	0.0308	mg/kg	J



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-8-5.5
22E0245-13 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 13:15

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 17:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-13 A
Preparation Batch: BKE0480 Sample Size: 3.87 g (wet) Dry Weight: 3.12 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 80.58

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.61	1.60	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.54	1.60	ND	ug/kg	U
Bromomethane	74-83-9	1	0.62	1.60	ND	ug/kg	U
Chloroethane	75-00-3	1	1.99	3.21	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.56	3.21	ND	ug/kg	U
Acrolein	107-02-8	1	2.81	8.02	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	1.36	3.21	ND	ug/kg	U
Acetone	67-64-1	1	10.2	16.0	98.3	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.59	1.60	ND	ug/kg	U
Iodomethane	74-88-4	1	1.45	1.60	ND	ug/kg	U
Methylene Chloride	75-09-2	1	6.99	8.02	ND	ug/kg	U
Acrylonitrile	107-13-1	1	3.17	8.02	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.53	1.60	ND	ug/kg	U
trans-1,2-Dichloroethene	156-60-5	1	0.84	1.60	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	5.22	8.02	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.45	1.60	ND	ug/kg	U
2-Butanone	78-93-3	1	3.91	8.02	ND	ug/kg	U
2,2-Dichloropropane	594-20-7	1	0.49	1.60	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.41	1.60	ND	ug/kg	U
Chloroform	67-66-3	1	0.46	1.60	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.63	1.60	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.96	1.60	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.45	1.60	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.50	1.60	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.38	1.60	ND	ug/kg	U
Benzene	71-43-2	1	0.26	1.60	ND	ug/kg	U
Trichloroethene	79-01-6	1	0.41	1.60	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.53	1.60	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.41	1.60	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.57	1.60	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	4.83	8.02	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	2.19	8.02	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.42	1.60	ND	ug/kg	U
Toluene	108-88-3	1	0.40	1.60	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-5.5
22E0245-13 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 13:15

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 17:41

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.66	1.60	ND	ug/kg	U
2-Hexanone	591-78-6	1	2.04	8.02	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.43	1.60	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.38	1.60	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.32	1.60	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.43	1.60	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.49	1.60	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.33	1.60	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.36	1.60	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.57	1.60	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.79	3.21	ND	ug/kg	U
o-Xylene	95-47-6	1	0.38	1.60	ND	ug/kg	U
Xylenes, total	1330-20-7	1	1.12	3.21	ND	ug/kg	U
Styrene	100-42-5	1	0.39	1.60	ND	ug/kg	U
Bromoform	75-25-2	1	0.74	1.60	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.44	1.60	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	2.40	3.21	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	4.41	8.02	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.38	1.60	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.40	1.60	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.42	1.60	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.35	1.60	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.47	1.60	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.40	1.60	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.41	1.60	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.42	1.60	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.39	1.60	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.46	1.60	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.39	1.60	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.69	1.60	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.45	1.60	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	1.05	1.60	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	3.78	8.02	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.91	8.02	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.89	8.02	ND	ug/kg	U
Naphthalene	91-20-3	1	3.95	8.02	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	3.72	8.02	ND	ug/kg	U



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-5.5
22E0245-13 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 13:15

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 17:41

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.65	1.60	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.41	1.60	ND	ug/kg	U
2-Pentanone	107-87-9	1	3.44	8.02	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-149 %	116	%	
<i>Surrogate: Toluene-d8</i>				77-120 %	103	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	100	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	103	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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MW-8-5.5
22E0245-13 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/12/2022 13:15
Instrument: NT2 Analyst: LH Analyzed: 05/18/2022 10:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Methanol Extraction) Extract ID: 22E0245-13 C
Preparation Batch: BKE0457 Sample Size: 3.571 g (wet)
Prepared: 05/18/2022 Final Volume: 5 mL Dry Weight: 2.88 g
% Solids: 80.58

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	9890	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	95.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	94.8	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-5.5
22E0245-13 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/12/2022 13:15

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 21:56

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Sample Size: 12.43 g (wet)	Extract ID: 22E0245-13 G 02
	Preparation Batch: BKE0465	Final Volume: 1 mL	Dry Weight: 10.02 g
	Prepared: 05/20/2022		% Solids: 80.58
Sample Cleanup:	Cleanup Method: GPC	Initial Volume: 1 uL	Extract ID: 22E0245-13 G 02
	Cleanup Batch: CKF0016	Final Volume: 1 uL	
	Cleaned: 03-Jun-2022		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	ND	ug/kg	U
bis(2-chloroethyl) ether	111-44-4	1	19.3	49.9	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.2	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.6	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.9	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	99.8	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	99.8	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.0	200	ND	ug/kg	U
4-Chloroaniline	106-47-8	1	8.4	99.8	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	99.8	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.4	99.8	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	99.8	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	99.8	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	7.9	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	99.8	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-5.5
22E0245-13 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/12/2022 13:15

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 21:56

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.4	99.8	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.2	99.8	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.8	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	99.8	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	99.8	ND	ug/kg	U
Fluorene	86-73-7	1	14.5	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	49.9	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	49.9	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.4	99.8	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	37.9	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	99.8	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	6.0	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	99.8	ND	ug/kg	U
Chrysene	218-01-9	1	6.1	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.5	49.9	ND	ug/kg	U
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	39.9	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.3	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	63.3	%	
Surrogate: Phenol-d5				29-120 %	65.9	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-5.5
22E0245-13 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/12/2022 13:15

Instrument: NT10 Analyst: VTS

Analyzed: 06/07/2022 21:56

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Chlorophenol-d4</i>		31-120 %	85.6	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>		32-120 %	75.8	%	
<i>Surrogate: Nitrobenzene-d5</i>		30-120 %	86.6	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		35-120 %	83.0	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		24-134 %	98.7	%	
<i>Surrogate: p-Terphenyl-d14</i>		37-120 %	81.7	%	



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Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-5.5
22E0245-13 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM
Instrument: NT11 Analyst: VTS

Sampled: 05/12/2022 13:15
Analyzed: 06/04/2022 00:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Low Level
Preparation Batch: BKE0466 Sample Size: 12.43 g (wet)
Prepared: 05/23/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CKF0003 Initial Volume: 0.5 mL
Cleaned: 02-Jun-2022 Final Volume: 0.5 mL

Extract ID: 22E0245-13 G 03
Dry Weight: 10.02 g
% Solids: 80.58
Extract ID: 22E0245-13 G 03

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes	
Naphthalene	91-20-3	1	0.44	0.60	0.82	ug/kg		
1-Methylnaphthalene	90-12-0	1	0.11	0.50	1.09	ug/kg		
2-Methylnaphthalene	91-57-6	1	0.13	0.50	1.40	ug/kg		
Acenaphthylene	208-96-8	1	0.06	0.50	0.12	ug/kg	J	
Acenaphthene	83-32-9	1	0.09	0.50	0.15	ug/kg	J	
Dibenzofuran	132-64-9	1	0.13	0.50	0.66	ug/kg		
Fluorene	86-73-7	1	0.07	0.50	0.64	ug/kg		
Phenanthrene	85-01-8	1	0.11	0.50	4.01	ug/kg		
Anthracene	120-12-7	1	0.07	0.50	0.25	ug/kg	J	
Fluoranthene	206-44-0	1	0.08	0.50	2.24	ug/kg		
Pyrene	129-00-0	1	0.09	0.50	3.02	ug/kg		
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.84	ug/kg		
Chrysene	218-01-9	1	0.07	0.50	2.00	ug/kg		
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	1.43	ug/kg		
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.38	ug/kg	J	
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	0.34	ug/kg	J	
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.83	ug/kg		
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.68	ug/kg		
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	0.27	ug/kg	J	
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	1.87	ug/kg		
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	51.0	%	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	118	%	Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	90.2	%	



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MW-8-5.5
22E0245-13 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/12/2022 13:15
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 22:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-13 G 01
Preparation Batch: BKE0386 Dry Weight: 8.07 g
Prepared: 05/17/2022 Final Volume: 1 mL % Solids: 80.58

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24) HC ID: DRO	DRO	1	6.20	6.73	mg/kg	
Motor Oil Range Organics (C24-C38) HC ID: MOTOR OIL	RRO	1	12.4	26.6	mg/kg	
<i>Surrogate: o-Terphenyl</i>			50-150 %	109	%	



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Reported:
15-Jun-2022 16:27

MW-8-5.5
22E0245-13 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/12/2022 13:15
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 17:39

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 15.52 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-13 G 04 Dry Weight: 12.51 g % Solids: 80.58
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleaned: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-13 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-13 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-13 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U
<i>Surrogate: Decachlorobiphenyl</i>					40-126 %	80.2 %	
<i>Surrogate: Tetrachlorometaxylene</i>					44-120 %	71.3 %	
<i>Surrogate: Decachlorobiphenyl [2C]</i>					40-126 %	90.9 %	
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					44-120 %	68.9 %	



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MW-8-5.5
22E0245-13 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/12/2022 13:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 22:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-13 F 01
Preparation Batch: BKE0677 Dry Weight: 0.81 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 78.74

Analyte	CAS Number	Dilution	Detection		Reporting		Result	Units	Notes
			Limit	Limit	Limit	Limit			
Antimony	7440-36-0	20	0.13	0.25	ND	mg/kg		U	
Beryllium	7440-41-7	20	0.02	0.25	0.38	mg/kg			
Chromium	7440-47-3	20	0.32	0.62	52.2	mg/kg			
Lead	7439-92-1	20	0.06	0.12	7.10	mg/kg			
Silver	7440-22-4	20	0.03	0.25	0.11	mg/kg		J	
Thallium	7440-28-0	20	0.03	0.25	0.10	mg/kg		J	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-5.5
22E0245-13 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 05/12/2022 13:15

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/01/2022 22:04

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SWN EPA 3050B

Extract ID: 22E0245-13 F 01

Preparation Batch: BKE0677

Sample Size: 1.028 g (wet)

Dry Weight: 0.81 g

Prepared: 05/25/2022

Final Volume: 50 mL

% Solids: 78.74

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.05	0.25	5.95	mg/kg	
Cadmium	7440-43-9	20	0.04	0.12	0.26	mg/kg	
Copper	7440-50-8	20	0.21	0.62	41.2	mg/kg	
Nickel	7440-02-0	20	0.10	0.62	83.7	mg/kg	
Selenium	7782-49-2	20	0.22	0.62	0.89	mg/kg	
Zinc	7440-66-6	20	3.6	7.4	78.9	mg/kg	



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MW-8-5.5
22E0245-13 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/12/2022 13:15
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 15:12

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: SMM EPA 7471B	Sample Size: 0.242 g (wet)	Extract ID: 22E0245-13 F
	Preparation Batch: BKE0639	Final Volume: 50 mL	Dry Weight: 0.19 g
	Prepared: 05/25/2022		% Solids: 78.74

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00551	0.0262	0.0532	mg/kg	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-9.5
22E0245-14 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 13:35

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 18:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-14 A
Preparation Batch: BKE0480 Sample Size: 4.81 g (wet) Dry Weight: 3.67 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 76.31

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.52	1.36	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.46	1.36	ND	ug/kg	U
Bromomethane	74-83-9	1	0.53	1.36	ND	ug/kg	U
Chloroethane	75-00-3	1	1.69	2.72	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.33	2.72	ND	ug/kg	U
Acrolein	107-02-8	1	2.39	6.81	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	1.16	2.72	ND	ug/kg	U
Acetone	67-64-1	1	8.64	13.6	89.4	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.51	1.36	ND	ug/kg	U
Iodomethane	74-88-4	1	1.23	1.36	ND	ug/kg	U
Methylene Chloride	75-09-2	1	5.94	6.81	6.78	ug/kg	J
Acrylonitrile	107-13-1	1	2.69	6.81	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.45	1.36	5.58	ug/kg	
trans-1,2-Dichloroethene	156-60-5	1	0.72	1.36	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	4.43	6.81	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.39	1.36	ND	ug/kg	U
2-Butanone	78-93-3	1	3.33	6.81	ND	ug/kg	U
2,2-Dichloropropane	594-20-7	1	0.42	1.36	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.35	1.36	ND	ug/kg	U
Chloroform	67-66-3	1	0.39	1.36	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.54	1.36	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.81	1.36	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.38	1.36	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.43	1.36	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.32	1.36	ND	ug/kg	U
Benzene	71-43-2	1	0.22	1.36	0.44	ug/kg	J
Trichloroethene	79-01-6	1	0.35	1.36	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.45	1.36	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.35	1.36	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.48	1.36	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	4.11	6.81	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	1.86	6.81	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.36	1.36	ND	ug/kg	U
Toluene	108-88-3	1	0.34	1.36	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-9.5
22E0245-14 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 13:35

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 18:07

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.56	1.36	ND	ug/kg	U
2-Hexanone	591-78-6	1	1.73	6.81	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.37	1.36	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.32	1.36	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.27	1.36	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.36	1.36	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.42	1.36	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.28	1.36	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.31	1.36	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.48	1.36	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.67	2.72	ND	ug/kg	U
o-Xylene	95-47-6	1	0.33	1.36	ND	ug/kg	U
Xylenes, total	1330-20-7	1	0.95	2.72	ND	ug/kg	U
Styrene	100-42-5	1	0.34	1.36	ND	ug/kg	U
Bromoform	75-25-2	1	0.63	1.36	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.37	1.36	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	2.04	2.72	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	3.75	6.81	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.32	1.36	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.34	1.36	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.36	1.36	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.29	1.36	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.40	1.36	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.34	1.36	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.34	1.36	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.36	1.36	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.33	1.36	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.40	1.36	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.33	1.36	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.59	1.36	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.38	1.36	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.89	1.36	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	3.21	6.81	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.48	6.81	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.45	6.81	ND	ug/kg	U
Naphthalene	91-20-3	1	3.36	6.81	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	3.16	6.81	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-9.5
22E0245-14 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 13:35

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 18:07

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.55	1.36	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.35	1.36	ND	ug/kg	U
2-Pentanone	107-87-9	1	2.92	6.81	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				<i>80-149 %</i>	<i>121</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>				<i>77-120 %</i>	<i>102</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>99.9</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				<i>80-120 %</i>	<i>104</i>	<i>%</i>	



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MW-8-9.5
22E0245-14 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/12/2022 13:35
Instrument: NT2 Analyst: LH Analyzed: 05/18/2022 10:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Methanol Extraction) Extract ID: 22E0245-14 C
Preparation Batch: BKE0457 Sample Size: 4.494 g (wet)
Prepared: 05/18/2022 Final Volume: 5 mL Dry Weight: 3.43 g
% Solids: 76.31

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	8840	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	94.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	101	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-9.5
22E0245-14 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/12/2022 13:35
Instrument: NT10 Analyst: VTS Analyzed: 06/10/2022 19:46

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Extract ID: 22E0245-14 G 02
	Preparation Batch: BKE0465	Dry Weight: 10.02 g
	Prepared: 05/20/2022	% Solids: 76.31
Sample Cleanup:	Cleanup Method: GPC	Extract ID: 22E0245-14 G 02
	Cleanup Batch: CKF0016	
	Cleaned: 03-Jun-2022	
	Initial Volume: 1 uL	
	Final Volume: 1 uL	

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	ND	ug/kg	U
bis(2-chloroethyl) ether	111-44-4	1	19.3	49.9	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.2	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.6	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.9	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	99.8	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	99.8	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.0	200	ND	ug/kg	U
4-Chloroaniline	106-47-8	1	8.4	99.8	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	99.8	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.4	99.8	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	99.8	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	99.8	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	7.9	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	99.8	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-9.5
22E0245-14 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/12/2022 13:35

Instrument: NT10 Analyst: VTS

Analyzed: 06/10/2022 19:46

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.4	99.8	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.2	99.8	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.7	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	99.8	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	99.8	ND	ug/kg	U
Fluorene	86-73-7	1	14.5	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	49.9	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	49.9	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.4	99.8	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	37.9	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	99.8	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	9.8	ug/kg	J
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	6.2	ug/kg	J
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	5.9	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	99.8	ND	ug/kg	U
Chrysene	218-01-9	1	6.0	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.4	49.9	ND	ug/kg	U
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	39.9	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.2	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	70.9	%	
Surrogate: Phenol-d5				29-120 %	68.6	%	



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MW-8-9.5
22E0245-14 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/12/2022 13:35
Instrument: NT10 Analyst: VTS Analyzed: 06/10/2022 19:46

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Chlorophenol-d4</i>		31-120 %	85.0	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>		32-120 %	89.8	%	
<i>Surrogate: Nitrobenzene-d5</i>		30-120 %	97.4	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		35-120 %	87.8	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		24-134 %	101	%	
<i>Surrogate: p-Terphenyl-d14</i>		37-120 %	93.5	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-9.5
22E0245-14 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/12/2022 13:35
Instrument: NT11 Analyst: VTS Analyzed: 06/04/2022 01:04

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-14 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.03 g
	Sample Size: 13.14 g (wet)	% Solids: 76.31
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-14 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes	
Naphthalene	91-20-3	1	0.44	0.60	3.49	ug/kg		
1-Methylnaphthalene	90-12-0	1	0.11	0.50	5.89	ug/kg		
2-Methylnaphthalene	91-57-6	1	0.13	0.50	4.47	ug/kg		
Acenaphthylene	208-96-8	1	0.06	0.50	10.6	ug/kg		
Acenaphthene	83-32-9	1	0.09	0.50	0.78	ug/kg		
Dibenzofuran	132-64-9	1	0.13	0.50	3.19	ug/kg		
Fluorene	86-73-7	1	0.07	0.50	5.95	ug/kg		
Phenanthrene	85-01-8	1	0.11	0.50	50.6	ug/kg	E	
Anthracene	120-12-7	1	0.07	0.50	5.73	ug/kg		
Fluoranthene	206-44-0	1	0.08	0.50	39.6	ug/kg		
Pyrene	129-00-0	1	0.09	0.50	63.9	ug/kg	E	
Benzo(a)anthracene	56-55-3	1	0.07	0.50	22.1	ug/kg		
Chrysene	218-01-9	1	0.07	0.50	33.6	ug/kg		
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	19.0	ug/kg		
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	12.3	ug/kg		
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	11.8	ug/kg		
Benzo(a)pyrene	50-32-8	1	0.09	0.50	29.6	ug/kg		
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	19.2	ug/kg		
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	6.89	ug/kg		
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	23.1	ug/kg		
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	57.3	%	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	113	%	Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	75.2	%	



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MW-8-9.5
22E0245-14 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/12/2022 13:35
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 23:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-14 G 01
Preparation Batch: BKE0386 Sample Size: 10.02 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 7.65 g
% Solids: 76.31

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24) HC ID: DRO	DRO	1	6.54	10.8	mg/kg	
Motor Oil Range Organics (C24-C38) HC ID: MOTOR OIL	RRO	1	13.1	30.5	mg/kg	
<i>Surrogate: o-Terphenyl</i>			50-150 %	110	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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MW-8-9.5
22E0245-14 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/12/2022 13:35
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 18:00

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 16.39 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-14 G 04 Dry Weight: 12.51 g % Solids: 76.31
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleaned: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-14 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-14 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-14 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U

Surrogate: Decachlorobiphenyl	40-126 %	75.9 %
Surrogate: Tetrachlorometaxylene	44-120 %	65.8 %
Surrogate: Decachlorobiphenyl [2C]	40-126 %	80.9 %
Surrogate: Tetrachlorometaxylene [2C]	44-120 %	70.0 %



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MW-8-9.5
22E0245-14 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/12/2022 13:35
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 22:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-14 F 01
Preparation Batch: BKE0677 Dry Weight: 0.88 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 85.66

Analyte	CAS Number	Dilution	Detection		Reporting		Result	Units	Notes
			Limit	Limit	Limit	Limit			
Antimony	7440-36-0	20	0.12	0.23	ND	mg/kg		U	
Beryllium	7440-41-7	20	0.02	0.23	0.12	mg/kg		J	
Chromium	7440-47-3	20	0.30	0.57	9.61	mg/kg			
Lead	7439-92-1	20	0.06	0.11	4.78	mg/kg			
Silver	7440-22-4	20	0.03	0.23	0.05	mg/kg		J	
Thallium	7440-28-0	20	0.03	0.23	0.03	mg/kg		J	



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MW-8-9.5
22E0245-14 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/12/2022 13:35
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 22:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-14 F 01
Preparation Batch: BKE0677 Dry Weight: 0.88 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 85.66

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.04	0.23	2.46	mg/kg	
Cadmium	7440-43-9	20	0.03	0.11	0.04	mg/kg	J
Copper	7440-50-8	20	0.20	0.57	10.6	mg/kg	
Nickel	7440-02-0	20	0.09	0.57	7.91	mg/kg	
Selenium	7782-49-2	20	0.20	0.57	0.44	mg/kg	J
Zinc	7440-66-6	20	3.3	6.8	24.0	mg/kg	



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MW-8-9.5
22E0245-14 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/12/2022 13:35
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 15:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SMM EPA 7471B Extract ID: 22E0245-14 F
Preparation Batch: BKE0639 Dry Weight: 0.19 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 85.66

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00555	0.0264	ND	mg/kg	U



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-8-9.5
22E0245-14RE1 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 05/12/2022 13:35

Instrument: NT11 Analyst: VTS

Analyzed: 06/04/2022 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-14RE1 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.03 g
	Sample Size: 13.14 g (wet)	% Solids: 76.31
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-14RE1 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	2	0.88	1.20	3.45	ug/kg	D
1-Methylnaphthalene	90-12-0	2	0.21	1.00	5.40	ug/kg	D
2-Methylnaphthalene	91-57-6	2	0.26	1.00	4.35	ug/kg	D
Acenaphthylene	208-96-8	2	0.13	1.00	10.8	ug/kg	D
Acenaphthene	83-32-9	2	0.18	1.00	1.53	ug/kg	D
Dibenzofuran	132-64-9	2	0.25	1.00	3.20	ug/kg	D
Fluorene	86-73-7	2	0.14	1.00	6.05	ug/kg	D
Phenanthrene	85-01-8	2	0.23	1.00	58.9	ug/kg	D
Anthracene	120-12-7	2	0.15	1.00	6.39	ug/kg	D
Fluoranthene	206-44-0	2	0.16	1.00	50.3	ug/kg	D
Pyrene	129-00-0	2	0.18	1.00	74.3	ug/kg	D
Benzo(a)anthracene	56-55-3	2	0.14	1.00	24.2	ug/kg	D
Chrysene	218-01-9	2	0.14	1.00	35.5	ug/kg	D
Benzo(b)fluoranthene	205-99-2	2	0.13	1.00	19.9	ug/kg	D
Benzo(k)fluoranthene	207-08-9	2	0.20	1.00	12.2	ug/kg	D
Benzo(j)fluoranthene	205-82-3	2	0.19	1.00	12.2	ug/kg	D
Benzo(a)pyrene	50-32-8	2	0.17	1.00	30.3	ug/kg	D
Indeno(1,2,3-cd)pyrene	193-39-5	2	0.18	1.00	17.9	ug/kg	D
Dibenzo(a,h)anthracene	53-70-3	2	0.21	1.00	6.30	ug/kg	D
Benzo(g,h,i)perylene	191-24-2	2	0.17	1.00	22.1	ug/kg	D
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	57.9	%
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	109	% Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	88.0	%



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-8-11
22E0245-15 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 13:40

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 18:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-15 A
Preparation Batch: BKE0480 Sample Size: 5.21 g (wet) Dry Weight: 3.56 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 68.35

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.53	1.40	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.47	1.40	ND	ug/kg	U
Bromomethane	74-83-9	1	0.55	1.40	ND	ug/kg	U
Chloroethane	75-00-3	1	1.75	2.81	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.37	2.81	ND	ug/kg	U
Acrolein	107-02-8	1	2.46	7.02	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	1.19	2.81	ND	ug/kg	U
Acetone	67-64-1	1	8.91	14.0	82.9	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.52	1.40	ND	ug/kg	U
Iodomethane	74-88-4	1	1.27	1.40	ND	ug/kg	U
Methylene Chloride	75-09-2	1	6.12	7.02	ND	ug/kg	U
Acrylonitrile	107-13-1	1	2.78	7.02	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.46	1.40	4.87	ug/kg	
trans-1,2-Dichloroethene	156-60-5	1	0.74	1.40	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	4.57	7.02	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.40	1.40	ND	ug/kg	U
2-Butanone	78-93-3	1	3.43	7.02	ND	ug/kg	U
2,2-Dichloropropane	594-20-7	1	0.43	1.40	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.36	1.40	ND	ug/kg	U
Chloroform	67-66-3	1	0.40	1.40	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.55	1.40	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.84	1.40	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.40	1.40	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.44	1.40	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.33	1.40	ND	ug/kg	U
Benzene	71-43-2	1	0.23	1.40	ND	ug/kg	U
Trichloroethene	79-01-6	1	0.36	1.40	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.47	1.40	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.36	1.40	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.50	1.40	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	4.23	7.02	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	1.92	7.02	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.37	1.40	ND	ug/kg	U
Toluene	108-88-3	1	0.35	1.40	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-8-11
22E0245-15 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 13:40

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 18:32

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.58	1.40	ND	ug/kg	U
2-Hexanone	591-78-6	1	1.79	7.02	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.38	1.40	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.33	1.40	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.28	1.40	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.37	1.40	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.43	1.40	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.29	1.40	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.32	1.40	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.50	1.40	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.69	2.81	ND	ug/kg	U
o-Xylene	95-47-6	1	0.34	1.40	ND	ug/kg	U
Xylenes, total	1330-20-7	1	0.98	2.81	ND	ug/kg	U
Styrene	100-42-5	1	0.35	1.40	ND	ug/kg	U
Bromoform	75-25-2	1	0.65	1.40	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.38	1.40	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	2.10	2.81	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	3.87	7.02	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.33	1.40	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.35	1.40	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.37	1.40	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.30	1.40	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.41	1.40	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.35	1.40	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.36	1.40	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.37	1.40	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.34	1.40	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.41	1.40	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.34	1.40	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.61	1.40	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.39	1.40	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.92	1.40	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	3.31	7.02	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.55	7.02	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.53	7.02	ND	ug/kg	U
Naphthalene	91-20-3	1	3.46	7.02	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	3.26	7.02	ND	ug/kg	U



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MW-8-11
22E0245-15 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 13:40

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 18:32

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.57	1.40	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.36	1.40	ND	ug/kg	U
2-Pentanone	107-87-9	1	3.01	7.02	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-149 %	120	%	
<i>Surrogate: Toluene-d8</i>				77-120 %	107	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	103	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	104	%	



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MW-8-11
22E0245-15 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/12/2022 13:40
Instrument: NT2 Analyst: LH Analyzed: 05/18/2022 11:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Methanol Extraction) Extract ID: 22E0245-15 C
Preparation Batch: BKE0457 Sample Size: 5.313 g (wet)
Prepared: 05/18/2022 Final Volume: 5 mL Dry Weight: 3.63 g
% Solids: 68.35

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	9200	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	95.8	%	



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Project: West Duwamish CSO
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Reported:
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MW-8-11
22E0245-15 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/12/2022 13:40
Instrument: NT10 Analyst: VTS Analyzed: 06/10/2022 20:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-15 G 02
Preparation Batch: BKE0465 Sample Size: 14.64 g (wet)
Prepared: 05/20/2022 Final Volume: 1 mL Dry Weight: 10.01 g
% Solids: 68.35

Sample Cleanup: Cleanup Method: GPC Extract ID: 22E0245-15 G 02
Cleanup Batch: CKF0016 Initial Volume: 1 uL
Cleaned: 03-Jun-2022 Final Volume: 1 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	ND	ug/kg	U
bis(2-chloroethyl) ether	111-44-4	1	19.3	50.0	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.2	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.7	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.9	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	99.9	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	99.9	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.0	200	40.3	ug/kg	J
4-Chloroaniline	106-47-8	1	8.4	99.9	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	99.9	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.4	99.9	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	99.9	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	99.9	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	8.0	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	99.9	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-11
22E0245-15 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/12/2022 13:40

Instrument: NT10 Analyst: VTS

Analyzed: 06/10/2022 20:24

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.5	99.9	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.2	99.9	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.8	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	99.9	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	99.9	ND	ug/kg	U
Fluorene	86-73-7	1	14.6	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	50.0	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	50.0	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.4	99.9	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	38.0	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	99.9	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	6.0	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	99.9	ND	ug/kg	U
Chrysene	218-01-9	1	6.1	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.5	50.0	ND	ug/kg	U
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	40.0	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.3	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	66.9	%	
Surrogate: Phenol-d5				29-120 %	58.0	%	



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-11
22E0245-15 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/12/2022 13:40

Instrument: NT10 Analyst: VTS

Analyzed: 06/10/2022 20:24

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Chlorophenol-d4</i>		31-120 %	77.8	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>		32-120 %	83.7	%	
<i>Surrogate: Nitrobenzene-d5</i>		30-120 %	88.9	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		35-120 %	72.7	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		24-134 %	93.3	%	
<i>Surrogate: p-Terphenyl-d14</i>		37-120 %	75.0	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-11
22E0245-15 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/12/2022 13:40
Instrument: NT11 Analyst: VTS Analyzed: 06/04/2022 01:36

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Low Level	Extract ID: 22E0245-15 G 03
	Preparation Batch: BKE0466	Dry Weight: 10.02 g
	Sample Size: 14.66 g (wet)	% Solids: 68.35
	Prepared: 05/23/2022	Final Volume: 0.5 mL
Sample Cleanup:	Cleanup Method: Silica Gel	Extract ID: 22E0245-15 G 03
	Cleanup Batch: CKF0003	Initial Volume: 0.5 mL
	Cleaned: 02-Jun-2022	Final Volume: 0.5 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes	
Naphthalene	91-20-3	1	0.44	0.60	ND	ug/kg	U	
1-Methylnaphthalene	90-12-0	1	0.11	0.50	0.63	ug/kg		
2-Methylnaphthalene	91-57-6	1	0.13	0.50	0.66	ug/kg		
Acenaphthylene	208-96-8	1	0.06	0.50	ND	ug/kg	U	
Acenaphthene	83-32-9	1	0.09	0.50	0.56	ug/kg		
Dibenzofuran	132-64-9	1	0.13	0.50	0.35	ug/kg	J	
Fluorene	86-73-7	1	0.07	0.50	0.41	ug/kg	J	
Phenanthrene	85-01-8	1	0.11	0.50	2.27	ug/kg		
Anthracene	120-12-7	1	0.07	0.50	0.27	ug/kg	J	
Fluoranthene	206-44-0	1	0.08	0.50	0.36	ug/kg	J	
Pyrene	129-00-0	1	0.09	0.50	0.90	ug/kg		
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.26	ug/kg	J	
Chrysene	218-01-9	1	0.07	0.50	0.93	ug/kg		
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	0.44	ug/kg	J	
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	ND	ug/kg	U	
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	ND	ug/kg	U	
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.19	ug/kg	J	
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.10	ug/kg	J	
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	ND	ug/kg	U	
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	0.32	ug/kg	J	
<i>Surrogate: 2-Methylnaphthalene-d10</i>					30-160 %	55.9	%	
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					30-160 %	118	%	Q
<i>Surrogate: Fluoranthene-d10</i>					30-160 %	62.1	%	



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MW-8-11
22E0245-15 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/12/2022 13:40
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 23:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-15 G 01
Preparation Batch: BKE0386 Sample Size: 10 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 6.83 g
% Solids: 68.35

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24) HC ID: DRO	DRO	1	7.32	8.21	mg/kg	
Motor Oil Range Organics (C24-C38) HC ID: MOTOR OIL	RRO	1	14.6	32.5	mg/kg	
<i>Surrogate: o-Terphenyl</i>			50-150 %	103	%	



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MW-8-11
22E0245-15 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/12/2022 13:40
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 18:21

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 18.3 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-15 G 04 Dry Weight: 12.51 g % Solids: 68.35
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleaned: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-15 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-15 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-15 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U

Surrogate: Decachlorobiphenyl	40-126 %	86.0 %
Surrogate: Tetrachlorometaxylene	44-120 %	78.4 %
Surrogate: Decachlorobiphenyl [2C]	40-126 %	101 %
Surrogate: Tetrachlorometaxylene [2C]	44-120 %	71.5 %



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-8-11
22E0245-15 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 05/12/2022 13:40

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/01/2022 23:34

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SWN EPA 3050B

Extract ID: 22E0245-15 F 01

Preparation Batch: BKE0677

Sample Size: 1.014 g (wet)

Dry Weight: 0.71 g

Prepared: 05/25/2022

Final Volume: 50 mL

% Solids: 69.97

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	20	0.14	0.28	ND	mg/kg	U
Beryllium	7440-41-7	20	0.03	0.28	0.35	mg/kg	
Chromium	7440-47-3	20	0.37	0.70	12.7	mg/kg	
Lead	7439-92-1	20	0.07	0.14	2.85	mg/kg	
Silver	7440-22-4	20	0.03	0.28	0.09	mg/kg	J
Thallium	7440-28-0	20	0.03	0.28	0.21	mg/kg	J



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Reported:
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MW-8-11
22E0245-15 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 05/12/2022 13:40

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/01/2022 23:34

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SWN EPA 3050B

Extract ID: 22E0245-15 F 01

Preparation Batch: BKE0677

Sample Size: 1.014 g (wet)

Dry Weight: 0.71 g

Prepared: 05/25/2022

Final Volume: 50 mL

% Solids: 69.97

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.05	0.28	12.6	mg/kg	
Cadmium	7440-43-9	20	0.04	0.14	0.42	mg/kg	
Copper	7440-50-8	20	0.25	0.70	31.9	mg/kg	
Nickel	7440-02-0	20	0.11	0.70	34.6	mg/kg	
Selenium	7782-49-2	20	0.25	0.70	1.15	mg/kg	
Zinc	7440-66-6	20	4.1	8.5	146	mg/kg	



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MW-8-11
22E0245-15 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/12/2022 13:40
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 15:21

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: SMM EPA 7471B	Sample Size: 0.285 g (wet)	Extract ID: 22E0245-15 F
	Preparation Batch: BKE0639	Final Volume: 50 mL	Dry Weight: 0.20 g
	Prepared: 05/25/2022		% Solids: 69.97

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Mercury	7439-97-6	1	0.00527	0.0251	0.0244	mg/kg	J



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-X-XX
22E0245-16 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 07:45

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 18:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-16 A
Preparation Batch: BKE0480 Sample Size: 4.57 g (wet) Dry Weight: 3.74 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 81.75

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.51	1.34	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.45	1.34	ND	ug/kg	U
Bromomethane	74-83-9	1	0.52	1.34	ND	ug/kg	U
Chloroethane	75-00-3	1	1.66	2.68	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	1.30	2.68	ND	ug/kg	U
Acrolein	107-02-8	1	2.34	6.69	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	1.13	2.68	ND	ug/kg	U
Acetone	67-64-1	1	8.49	13.4	105	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.50	1.34	ND	ug/kg	U
Iodomethane	74-88-4	1	1.21	1.34	ND	ug/kg	U
Methylene Chloride	75-09-2	1	5.84	6.69	5.95	ug/kg	J
Acrylonitrile	107-13-1	1	2.65	6.69	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.44	1.34	4.20	ug/kg	
trans-1,2-Dichloroethene	156-60-5	1	0.70	1.34	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	4.35	6.69	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.38	1.34	ND	ug/kg	U
2-Butanone	78-93-3	1	3.27	6.69	4.98	ug/kg	J
2,2-Dichloropropane	594-20-7	1	0.41	1.34	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.34	1.34	ND	ug/kg	U
Chloroform	67-66-3	1	0.39	1.34	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.53	1.34	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.80	1.34	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.38	1.34	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.42	1.34	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.31	1.34	ND	ug/kg	U
Benzene	71-43-2	1	0.22	1.34	0.64	ug/kg	J
Trichloroethene	79-01-6	1	0.34	1.34	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.44	1.34	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.34	1.34	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.48	1.34	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	4.04	6.69	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	1.83	6.69	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.35	1.34	ND	ug/kg	U
Toluene	108-88-3	1	0.33	1.34	ND	ug/kg	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

MW-X-XX
22E0245-16 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/13/2022 07:45

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 18:57

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.55	1.34	ND	ug/kg	U
2-Hexanone	591-78-6	1	1.70	6.69	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.36	1.34	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.31	1.34	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.26	1.34	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.36	1.34	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.41	1.34	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.28	1.34	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.30	1.34	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.47	1.34	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.66	2.68	ND	ug/kg	U
o-Xylene	95-47-6	1	0.32	1.34	ND	ug/kg	U
Xylenes, total	1330-20-7	1	0.93	2.68	ND	ug/kg	U
Styrene	100-42-5	1	0.33	1.34	ND	ug/kg	U
Bromoform	75-25-2	1	0.62	1.34	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.37	1.34	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	2.00	2.68	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	3.68	6.69	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.32	1.34	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.33	1.34	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.35	1.34	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.29	1.34	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.39	1.34	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.34	1.34	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.34	1.34	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.35	1.34	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.32	1.34	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.39	1.34	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.33	1.34	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.58	1.34	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.37	1.34	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.87	1.34	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	3.16	6.69	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	2.43	6.69	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	2.41	6.69	ND	ug/kg	U
Naphthalene	91-20-3	1	3.30	6.69	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	3.11	6.69	ND	ug/kg	U



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MW-X-XX
22E0245-16 (Solid)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/13/2022 07:45
Instrument: NT5 Analyst: PB Analyzed: 05/18/2022 18:57

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.54	1.34	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.34	1.34	ND	ug/kg	U
2-Pentanone	107-87-9	1	2.87	6.69	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				<i>80-149 %</i>	<i>116</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>				<i>77-120 %</i>	<i>105</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>99.6</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				<i>80-120 %</i>	<i>101</i>	<i>%</i>	



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MW-X-XX
22E0245-16 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/13/2022 07:45
Instrument: NT2 Analyst: LH Analyzed: 05/18/2022 11:28

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 5035 (Methanol Extraction)	Extract ID: 22E0245-16 C
	Preparation Batch: BKE0457	Dry Weight: 4.30 g
	Sample Size: 5.262 g (wet)	% Solids: 81.75
	Prepared: 05/18/2022	Final Volume: 5 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	6930	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	96.9	%	



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MW-X-XX
22E0245-16 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 07:45

Instrument: NT10 Analyst: VTS

Analyzed: 06/10/2022 21:03

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave)	Sample Size: 12.25 g (wet)	Extract ID: 22E0245-16 G 02
	Preparation Batch: BKE0465	Final Volume: 1 mL	Dry Weight: 10.01 g
	Prepared: 05/20/2022		% Solids: 81.75
Sample Cleanup:	Cleanup Method: GPC	Initial Volume: 1 uL	Extract ID: 22E0245-16 G 02
	Cleanup Batch: CKF0016	Final Volume: 1 uL	
	Cleaned: 03-Jun-2022		

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	4.4	20.0	ND	ug/kg	U
bis(2-chloroethyl) ether	111-44-4	1	19.3	49.9	ND	ug/kg	U
2-Chlorophenol	95-57-8	1	13.8	20.0	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	3.1	20.0	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	3.1	20.0	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	2.4	20.0	ND	ug/kg	U
Benzyl Alcohol	100-51-6	1	16.2	20.0	ND	ug/kg	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	3.4	20.0	ND	ug/kg	U
2-Methylphenol	95-48-7	1	6.7	20.0	ND	ug/kg	U
Hexachloroethane	67-72-1	1	3.4	20.0	ND	ug/kg	U
N-Nitroso-di-n-Propylamine	621-64-7	1	7.4	20.0	ND	ug/kg	U
4-Methylphenol	106-44-5	1	7.4	20.0	ND	ug/kg	U
Nitrobenzene	98-95-3	1	7.2	20.0	ND	ug/kg	U
Isophorone	78-59-1	1	3.9	20.0	ND	ug/kg	U
2-Nitrophenol	88-75-5	1	4.9	20.0	ND	ug/kg	U
2,4-Dimethylphenol	105-67-9	1	3.8	99.9	ND	ug/kg	U
Bis(2-Chloroethoxy)methane	111-91-1	1	4.3	20.0	ND	ug/kg	U
2,4-Dichlorophenol	120-83-2	1	15.3	99.9	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	3.6	20.0	ND	ug/kg	U
Naphthalene	91-20-3	1	4.2	20.0	ND	ug/kg	U
Benzoic acid	65-85-0	1	39.0	200	ND	ug/kg	U
4-Chloroaniline	106-47-8	1	8.4	99.9	ND	ug/kg	U
Hexachlorobutadiene	87-68-3	1	4.8	20.0	ND	ug/kg	U
4-Chloro-3-Methylphenol	59-50-7	1	12.4	99.9	ND	ug/kg	U
2-Methylnaphthalene	91-57-6	1	4.5	20.0	ND	ug/kg	U
Hexachlorocyclopentadiene	77-47-4	1	24.4	99.9	ND	ug/kg	U
2,4,6-Trichlorophenol	88-06-2	1	9.0	99.9	ND	ug/kg	U
2,4,5-Trichlorophenol	95-95-4	1	25.7	99.9	ND	ug/kg	U
2-Chloronaphthalene	91-58-7	1	7.9	20.0	ND	ug/kg	U
2-Nitroaniline	88-74-4	1	16.4	99.9	ND	ug/kg	U
Acenaphthylene	208-96-8	1	6.2	20.0	ND	ug/kg	U



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Project Manager: Zanna Satterwhite

Reported:
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MW-X-XX
22E0245-16 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/13/2022 07:45

Instrument: NT10 Analyst: VTS

Analyzed: 06/10/2022 21:03

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dimethylphthalate	131-11-3	1	4.4	20.0	ND	ug/kg	U
2,6-Dinitrotoluene	606-20-2	1	20.5	99.9	ND	ug/kg	U
Acenaphthene	83-32-9	1	5.2	20.0	ND	ug/kg	U
3-Nitroaniline	99-09-2	1	22.2	99.9	ND	ug/kg	U
2,4-Dinitrophenol	51-28-5	1	33.8	200	ND	ug/kg	U
Dibenzofuran	132-64-9	1	14.1	20.0	ND	ug/kg	U
4-Nitrophenol	100-02-7	1	32.6	99.9	ND	ug/kg	U
2,4-Dinitrotoluene	121-14-2	1	16.2	99.9	ND	ug/kg	U
Fluorene	86-73-7	1	14.5	20.0	ND	ug/kg	U
4-Chlorophenylphenyl ether	7005-72-3	1	19.1	49.9	ND	ug/kg	U
Diethyl phthalate	84-66-2	1	19.7	49.9	ND	ug/kg	U
4-Nitroaniline	100-01-6	1	29.4	99.9	ND	ug/kg	U
4,6-Dinitro-2-methylphenol	534-52-1	1	37.9	200	ND	ug/kg	U
N-Nitrosodiphenylamine	86-30-6	1	5.3	20.0	ND	ug/kg	U
4-Bromophenyl phenyl ether	101-55-3	1	17.0	20.0	ND	ug/kg	U
Hexachlorobenzene	118-74-1	1	13.5	20.0	ND	ug/kg	U
Pentachlorophenol	87-86-5	1	31.2	99.9	ND	ug/kg	U
Phenanthrene	85-01-8	1	8.7	20.0	ND	ug/kg	U
Anthracene	120-12-7	1	7.2	20.0	ND	ug/kg	U
Carbazole	86-74-8	1	4.3	20.0	ND	ug/kg	U
Di-n-Butylphthalate	84-74-2	1	5.6	20.0	ND	ug/kg	U
Fluoranthene	206-44-0	1	6.1	20.0	ND	ug/kg	U
Pyrene	129-00-0	1	5.7	20.0	ND	ug/kg	U
Butylbenzylphthalate	85-68-7	1	9.4	20.0	ND	ug/kg	U
Benzo(a)anthracene	56-55-3	1	6.0	20.0	ND	ug/kg	U
3,3'-Dichlorobenzidine	91-94-1	1	7.1	99.9	ND	ug/kg	U
Chrysene	218-01-9	1	6.1	20.0	ND	ug/kg	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	5.5	49.9	19.6	ug/kg	J
Di-n-Octylphthalate	117-84-0	1	4.4	20.0	ND	ug/kg	U
Benzofluoranthenes, Total		1	10.0	39.9	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	4.2	20.0	ND	ug/kg	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	14.6	20.0	ND	ug/kg	U
Dibenzo(a,h)anthracene	53-70-3	1	17.2	20.0	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	13.6	20.0	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	5.3	20.0	ND	ug/kg	U
Surrogate: 2-Fluorophenol				27-120 %	72.5	%	
Surrogate: Phenol-d5				29-120 %	73.1	%	



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MW-X-XX
22E0245-16 (Solid)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/13/2022 07:45
Instrument: NT10 Analyst: VTS Analyzed: 06/10/2022 21:03

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Chlorophenol-d4</i>		31-120 %	98.1	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>		32-120 %	94.8	%	
<i>Surrogate: Nitrobenzene-d5</i>		30-120 %	103	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		35-120 %	94.7	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		24-134 %	104	%	
<i>Surrogate: p-Terphenyl-d14</i>		37-120 %	99.3	%	



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MW-X-XX
22E0245-16 (Solid)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM
Instrument: NT11 Analyst: VTS

Sampled: 05/13/2022 07:45
Analyzed: 06/04/2022 02:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Low Level
Preparation Batch: BKE0466 Sample Size: 12.25 g (wet)
Prepared: 05/23/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CKF0003 Initial Volume: 0.5 mL
Cleaned: 02-Jun-2022 Final Volume: 0.5 mL

Extract ID: 22E0245-16 G 03
Dry Weight: 10.01 g
% Solids: 81.75
Extract ID: 22E0245-16 G 03

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.44	0.60	ND	ug/kg	U
1-Methylnaphthalene	90-12-0	1	0.11	0.50	0.36	ug/kg	J
2-Methylnaphthalene	91-57-6	1	0.13	0.50	0.40	ug/kg	J
Acenaphthylene	208-96-8	1	0.06	0.50	ND	ug/kg	U
Acenaphthene	83-32-9	1	0.09	0.50	ND	ug/kg	U
Dibenzofuran	132-64-9	1	0.13	0.50	0.16	ug/kg	J
Fluorene	86-73-7	1	0.07	0.50	ND	ug/kg	U
Phenanthrene	85-01-8	1	0.11	0.50	0.60	ug/kg	
Anthracene	120-12-7	1	0.07	0.50	0.08	ug/kg	J
Fluoranthene	206-44-0	1	0.08	0.50	0.46	ug/kg	J
Pyrene	129-00-0	1	0.09	0.50	0.52	ug/kg	
Benzo(a)anthracene	56-55-3	1	0.07	0.50	0.19	ug/kg	J
Chrysene	218-01-9	1	0.07	0.50	0.43	ug/kg	J
Benzo(b)fluoranthene	205-99-2	1	0.07	0.50	0.29	ug/kg	J
Benzo(k)fluoranthene	207-08-9	1	0.10	0.50	0.11	ug/kg	J
Benzo(j)fluoranthene	205-82-3	1	0.10	0.50	ND	ug/kg	U
Benzo(a)pyrene	50-32-8	1	0.09	0.50	0.14	ug/kg	J
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.09	0.50	0.11	ug/kg	J
Dibenzo(a,h)anthracene	53-70-3	1	0.10	0.50	ND	ug/kg	U
Benzo(g,h,i)perylene	191-24-2	1	0.08	0.50	0.25	ug/kg	J
Surrogate: 2-Methylnaphthalene-d10				30-160 %	57.7	%	
Surrogate: Dibenzo[a,h]anthracene-d14				30-160 %	133	%	Q
Surrogate: Fluoranthene-d10				30-160 %	97.5	%	



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MW-X-XX
22E0245-16 (Solid)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/13/2022 07:45
Instrument: FID4 Analyst: CTO Analyzed: 05/18/2022 23:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3546 (Microwave) Extract ID: 22E0245-16 G 01
Preparation Batch: BKE0386 Sample Size: 10.05 g (wet)
Prepared: 05/17/2022 Final Volume: 1 mL Dry Weight: 8.22 g
% Solids: 81.75

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	6.09	ND	mg/kg	U
Motor Oil Range Organics (C24-C38)	RRO	1	12.2	17.1	mg/kg	
HC ID: MOTOR OIL						
Surrogate: <i>o</i> -Terphenyl			50-150 %	108	%	



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MW-X-XX
22E0245-16 (Solid)

Aroclor PCB

Method: EPA 8082A Sampled: 05/13/2022 07:45
Instrument: ECD7 Analyst: JGR Analyzed: 05/25/2022 18:42

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3546 (Microwave) Preparation Batch: BKE0467 Prepared: 05/23/2022	Sample Size: 15.29 g (wet) Final Volume: 2.5 mL	Extract ID: 22E0245-16 G 04 Dry Weight: 12.50 g % Solids: 81.75
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKE0218 Cleaned: 24-May-2022	Initial Volume: 2.5 mL Final Volume: 2.5 mL	Extract ID: 22E0245-16 G 04
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKE0216 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-16 G 04
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKE0217 Cleaned: 24-May-2022	Initial Volume: 2.5 uL Final Volume: 2.5 uL	Extract ID: 22E0245-16 G 04

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1221	11104-28-2	1	1.6	4.0	ND	ug/kg	U
Aroclor 1232	11141-16-5	1	1.6	4.0	ND	ug/kg	U
Aroclor 1242	53469-21-9	1	1.6	4.0	ND	ug/kg	U
Aroclor 1248	12672-29-6	1	1.6	4.0	ND	ug/kg	U
Aroclor 1254	11097-69-1	1	1.6	4.0	ND	ug/kg	U
Aroclor 1260	11096-82-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1262	37324-23-5	1	0.6	4.0	ND	ug/kg	U
Aroclor 1268	11100-14-4	1	0.6	4.0	ND	ug/kg	U

Surrogate: Decachlorobiphenyl	40-126 %	83.9 %
Surrogate: Tetrachlorometaxylene	44-120 %	80.2 %
Surrogate: Decachlorobiphenyl [2C]	40-126 %	99.2 %
Surrogate: Tetrachlorometaxylene [2C]	44-120 %	77.0 %



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MW-X-XX
22E0245-16 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 05/13/2022 07:45

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/01/2022 22:14

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: SWN EPA 3050B

Extract ID: 22E0245-16 F 01

Preparation Batch: BKE0677

Sample Size: 1.007 g (wet)

Dry Weight: 0.83 g

Prepared: 05/25/2022

Final Volume: 50 mL

% Solids: 82.38

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	20	0.12	0.24	ND	mg/kg	U
Beryllium	7440-41-7	20	0.02	0.24	0.10	mg/kg	J
Chromium	7440-47-3	20	0.31	0.60	9.85	mg/kg	
Lead	7439-92-1	20	0.06	0.12	1.74	mg/kg	
Silver	7440-22-4	20	0.03	0.24	0.03	mg/kg	J
Thallium	7440-28-0	20	0.03	0.24	ND	mg/kg	U



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MW-X-XX
22E0245-16 (Solid)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/13/2022 07:45
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/01/2022 22:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: SWN EPA 3050B Extract ID: 22E0245-16 F 01
Preparation Batch: BKE0677 Dry Weight: 0.83 g
Prepared: 05/25/2022 Final Volume: 50 mL % Solids: 82.38

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	20	0.05	0.24	1.93	mg/kg	
Cadmium	7440-43-9	20	0.04	0.12	ND	mg/kg	U
Copper	7440-50-8	20	0.21	0.60	9.65	mg/kg	
Nickel	7440-02-0	20	0.10	0.60	6.56	mg/kg	
Selenium	7782-49-2	20	0.22	0.60	0.47	mg/kg	J
Zinc	7440-66-6	20	3.5	7.2	19.8	mg/kg	



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MW-X-XX
22E0245-16 (Solid)

Metals and Metallic Compounds

Method: EPA 7471B Sampled: 05/13/2022 07:45
Instrument: HYDRA Analyst: ML Analyzed: 05/26/2022 14:30

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: SMM EPA 7471B	Sample Size: 0.213 g (wet)	Extract ID: 22E0245-16 F
	Preparation Batch: BKE0639	Final Volume: 50 mL	Dry Weight: 0.18 g
	Prepared: 05/25/2022		% Solids: 82.38

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.00598	0.0285	ND	mg/kg	U



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Trip Blank-01
22E0245-17 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 00:00

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 19:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Sodium Bisulfate) Extract ID: 22E0245-17 F
Preparation Batch: BKE0480 Sample Size: 5 g (wet) Dry Weight: 5.00 g
Prepared: 05/18/2022 Final Volume: 5 mL % Solids: 100.00

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.38	1.00	ND	ug/kg	U
Vinyl Chloride	75-01-4	1	0.34	1.00	ND	ug/kg	U
Bromomethane	74-83-9	1	0.39	1.00	ND	ug/kg	U
Chloroethane	75-00-3	1	1.24	2.00	ND	ug/kg	U
Trichlorofluoromethane	75-69-4	1	0.98	2.00	ND	ug/kg	U
Acrolein	107-02-8	1	1.75	5.00	ND	ug/kg	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.85	2.00	ND	ug/kg	U
Acetone	67-64-1	1	6.35	10.0	50.2	ug/kg	
1,1-Dichloroethene	75-35-4	1	0.37	1.00	ND	ug/kg	U
Iodomethane	74-88-4	1	0.91	1.00	ND	ug/kg	U
Methylene Chloride	75-09-2	1	4.36	5.00	15.9	ug/kg	
Acrylonitrile	107-13-1	1	1.98	5.00	ND	ug/kg	U
Carbon Disulfide	75-15-0	1	0.33	1.00	ND	ug/kg	U
trans-1,2-Dichloroethene	156-60-5	1	0.53	1.00	ND	ug/kg	U
Vinyl Acetate	108-05-4	1	3.25	5.00	ND	ug/kg	U
1,1-Dichloroethane	75-34-3	1	0.28	1.00	ND	ug/kg	U
2-Butanone	78-93-3	1	2.44	5.00	ND	ug/kg	U
2,2-Dichloropropane	594-20-7	1	0.31	1.00	ND	ug/kg	U
cis-1,2-Dichloroethene	156-59-2	1	0.26	1.00	ND	ug/kg	U
Chloroform	67-66-3	1	0.29	1.00	ND	ug/kg	U
Bromochloromethane	74-97-5	1	0.40	1.00	ND	ug/kg	U
1,1,1-Trichloroethane	71-55-6	1	0.60	1.00	ND	ug/kg	U
1,1-Dichloropropene	563-58-6	1	0.28	1.00	ND	ug/kg	U
Carbon tetrachloride	56-23-5	1	0.31	1.00	ND	ug/kg	U
1,2-Dichloroethane	107-06-2	1	0.23	1.00	ND	ug/kg	U
Benzene	71-43-2	1	0.17	1.00	ND	ug/kg	U
Trichloroethene	79-01-6	1	0.26	1.00	ND	ug/kg	U
1,2-Dichloropropane	78-87-5	1	0.33	1.00	ND	ug/kg	U
Bromodichloromethane	75-27-4	1	0.26	1.00	ND	ug/kg	U
Dibromomethane	74-95-3	1	0.36	1.00	ND	ug/kg	U
2-Chloroethyl vinyl ether	110-75-8	1	3.02	5.00	ND	ug/kg	U
4-Methyl-2-Pentanone	108-10-1	1	1.37	5.00	ND	ug/kg	U
cis-1,3-Dichloropropene	10061-01-5	1	0.26	1.00	ND	ug/kg	U
Toluene	108-88-3	1	0.25	1.00	0.30	ug/kg	J



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Trip Blank-01
22E0245-17 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 00:00

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 19:23

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.41	1.00	ND	ug/kg	U
2-Hexanone	591-78-6	1	1.27	5.00	ND	ug/kg	U
1,1,2-Trichloroethane	79-00-5	1	0.27	1.00	ND	ug/kg	U
1,3-Dichloropropane	142-28-9	1	0.23	1.00	ND	ug/kg	U
Tetrachloroethene	127-18-4	1	0.20	1.00	ND	ug/kg	U
Dibromochloromethane	124-48-1	1	0.27	1.00	ND	ug/kg	U
1,2-Dibromoethane	106-93-4	1	0.31	1.00	ND	ug/kg	U
Chlorobenzene	108-90-7	1	0.21	1.00	ND	ug/kg	U
Ethylbenzene	100-41-4	1	0.23	1.00	ND	ug/kg	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.35	1.00	ND	ug/kg	U
m,p-Xylene	179601-23-1	1	0.49	2.00	ND	ug/kg	U
o-Xylene	95-47-6	1	0.24	1.00	ND	ug/kg	U
Xylenes, total	1330-20-7	1	0.70	2.00	ND	ug/kg	U
Styrene	100-42-5	1	0.25	1.00	ND	ug/kg	U
Bromoform	75-25-2	1	0.46	1.00	ND	ug/kg	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.27	1.00	ND	ug/kg	U
1,2,3-Trichloropropane	96-18-4	1	1.50	2.00	ND	ug/kg	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	2.75	5.00	ND	ug/kg	U
n-Propylbenzene	103-65-1	1	0.24	1.00	ND	ug/kg	U
Bromobenzene	108-86-1	1	0.25	1.00	ND	ug/kg	U
Isopropyl Benzene	98-82-8	1	0.26	1.00	ND	ug/kg	U
2-Chlorotoluene	95-49-8	1	0.22	1.00	ND	ug/kg	U
4-Chlorotoluene	106-43-4	1	0.29	1.00	ND	ug/kg	U
t-Butylbenzene	98-06-6	1	0.25	1.00	ND	ug/kg	U
1,3,5-Trimethylbenzene	108-67-8	1	0.25	1.00	ND	ug/kg	U
1,2,4-Trimethylbenzene	95-63-6	1	0.27	1.00	ND	ug/kg	U
s-Butylbenzene	135-98-8	1	0.24	1.00	ND	ug/kg	U
4-Isopropyl Toluene	99-87-6	1	0.29	1.00	ND	ug/kg	U
1,3-Dichlorobenzene	541-73-1	1	0.24	1.00	ND	ug/kg	U
1,4-Dichlorobenzene	106-46-7	1	0.43	1.00	ND	ug/kg	U
n-Butylbenzene	104-51-8	1	0.28	1.00	ND	ug/kg	U
1,2-Dichlorobenzene	95-50-1	1	0.65	1.00	ND	ug/kg	U
1,2-Dibromo-3-chloropropane	96-12-8	1	2.36	5.00	ND	ug/kg	U
1,2,4-Trichlorobenzene	120-82-1	1	1.82	5.00	ND	ug/kg	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.80	5.00	ND	ug/kg	U
Naphthalene	91-20-3	1	2.46	5.00	ND	ug/kg	U
1,2,3-Trichlorobenzene	87-61-6	1	2.32	5.00	ND	ug/kg	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Trip Blank-01
22E0245-17 (Solid)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/12/2022 00:00

Instrument: NT5 Analyst: PB

Analyzed: 05/18/2022 19:23

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.40	1.00	ND	ug/kg	U
Methyl tert-butyl Ether	1634-04-4	1	0.25	1.00	ND	ug/kg	U
2-Pentanone	107-87-9	1	2.15	5.00	ND	ug/kg	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-149 %	128	%	
<i>Surrogate: Toluene-d8</i>				77-120 %	105	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	101	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	104	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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Trip Blank-01
22E0245-17 (Solid)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/12/2022 00:00
Instrument: NT2 Analyst: LH Analyzed: 05/18/2022 09:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5035 (Methanol Extraction) Extract ID: 22E0245-17 A
Preparation Batch: BKE0457 Sample Size: 5.093 g (wet)
Prepared: 05/18/2022 Final Volume: 5 mL Dry Weight: 5.09 g
% Solids: 100.00

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	50	4910	ND	ug/kg	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			78-123 %	95.9	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0442 - EPA 5035 (Methanol Extraction)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0442-BLK1)		Prepared: 17-May-2022 Analyzed: 17-May-2022 12:23								
Gasoline Range Organics (Tol-Nap)	ND	5000	ug/kg							U
Surrogate: Toluene-d8	4.73		ug/kg	5.00		94.6	80-120			
Surrogate: 4-Bromofluorobenzene	4.80		ug/kg	5.00		96.0	78-123			
LCS (BKE0442-BS1)		Prepared: 17-May-2022 Analyzed: 17-May-2022 09:59								
Gasoline Range Organics (Tol-Nap)	51000	5000	ug/kg	50000		102	70-121			
Surrogate: Toluene-d8	5.06		ug/kg	5.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	5.22		ug/kg	5.00		104	78-123			
LCS Dup (BKE0442-BSD1)		Prepared: 17-May-2022 Analyzed: 17-May-2022 10:40								
Gasoline Range Organics (Tol-Nap)	46300	5000	ug/kg	50000		92.7	70-121	9.57	30	
Surrogate: Toluene-d8	5.00		ug/kg	5.00		100	80-120			
Surrogate: 4-Bromofluorobenzene	5.13		ug/kg	5.00		103	78-123			



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0457 - EPA 5035 (Methanol Extraction)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0457-BLK1)				Prepared: 18-May-2022 Analyzed: 18-May-2022 09:03						
Gasoline Range Organics (Tol-Nap)	ND	5000	ug/kg							U
Surrogate: Toluene-d8	4.66		ug/kg	5.00		93.2	80-120			
Surrogate: 4-Bromofluorobenzene	4.85		ug/kg	5.00		97.1	78-123			
LCS (BKE0457-BS1)				Prepared: 18-May-2022 Analyzed: 18-May-2022 06:59						
Gasoline Range Organics (Tol-Nap)	58100	5000	ug/kg	50000		116	70-121			
Surrogate: Toluene-d8	5.03		ug/kg	5.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	5.24		ug/kg	5.00		105	78-123			
LCS Dup (BKE0457-BSD1)				Prepared: 18-May-2022 Analyzed: 18-May-2022 07:40						
Gasoline Range Organics (Tol-Nap)	58500	5000	ug/kg	50000		117	70-121	0.74	30	
Surrogate: Toluene-d8	5.16		ug/kg	5.00		103	80-120			
Surrogate: 4-Bromofluorobenzene	5.40		ug/kg	5.00		108	78-123			
Matrix Spike (BKE0457-MS1)				Source: 22E0245-11		Prepared: 18-May-2022 Analyzed: 18-May-2022 11:49				
Gasoline Range Organics (Tol-Nap)	78200	6400	ug/kg	64000	ND	122	28-162			
Surrogate: Toluene-d8	5.06		ug/kg	5.00	4.89	101	80-120			
Surrogate: 4-Bromofluorobenzene	5.24		ug/kg	5.00	4.84	105	78-123			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BKE0457-MSD1)				Source: 22E0245-11		Prepared: 18-May-2022 Analyzed: 18-May-2022 12:10				
Gasoline Range Organics (Tol-Nap)	76900	6400	ug/kg	64000	ND	120	28-162	1.68	30	
Surrogate: Toluene-d8	4.95		ug/kg	5.00	4.89	99.1	80-120			
Surrogate: 4-Bromofluorobenzene	5.30		ug/kg	5.00	4.84	106	78-123			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0480 - EPA 5035 (Sodium Bisulfate)

Instrument: NT5 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0480-BLK1)						Prepared: 18-May-2022 Analyzed: 18-May-2022 10:23					
Chloromethane	ND	0.38	1.00	ug/kg							U
Vinyl Chloride	ND	0.34	1.00	ug/kg							U
Bromomethane	ND	0.39	1.00	ug/kg							U
Chloroethane	ND	1.24	2.00	ug/kg							U
Trichlorofluoromethane	ND	0.98	2.00	ug/kg							U
Acrolein	ND	1.75	5.00	ug/kg							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.85	2.00	ug/kg							U
Acetone	ND	6.35	10.0	ug/kg							U
1,1-Dichloroethene	ND	0.37	1.00	ug/kg							U
Iodomethane	ND	0.91	1.00	ug/kg							U
Methylene Chloride	ND	4.36	5.00	ug/kg							U
Acrylonitrile	ND	1.98	5.00	ug/kg							U
Carbon Disulfide	ND	0.33	1.00	ug/kg							U
trans-1,2-Dichloroethene	ND	0.53	1.00	ug/kg							U
Vinyl Acetate	ND	3.25	5.00	ug/kg							U
1,1-Dichloroethane	ND	0.28	1.00	ug/kg							U
2-Butanone	ND	2.44	5.00	ug/kg							U
2,2-Dichloropropane	ND	0.31	1.00	ug/kg							U
cis-1,2-Dichloroethene	ND	0.26	1.00	ug/kg							U
Chloroform	ND	0.29	1.00	ug/kg							U
Bromochloromethane	ND	0.40	1.00	ug/kg							U
1,1,1-Trichloroethane	ND	0.60	1.00	ug/kg							U
1,1-Dichloropropene	ND	0.28	1.00	ug/kg							U
Carbon tetrachloride	ND	0.31	1.00	ug/kg							U
1,2-Dichloroethane	ND	0.23	1.00	ug/kg							U
Benzene	ND	0.17	1.00	ug/kg							U
Trichloroethene	ND	0.26	1.00	ug/kg							U
1,2-Dichloropropane	ND	0.33	1.00	ug/kg							U
Bromodichloromethane	ND	0.26	1.00	ug/kg							U
Dibromomethane	ND	0.36	1.00	ug/kg							U
2-Chloroethyl vinyl ether	ND	3.02	5.00	ug/kg							U
4-Methyl-2-Pentanone	ND	1.37	5.00	ug/kg							U
cis-1,3-Dichloropropene	ND	0.26	1.00	ug/kg							U
Toluene	ND	0.25	1.00	ug/kg							U
trans-1,3-Dichloropropene	ND	0.41	1.00	ug/kg							U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0480 - EPA 5035 (Sodium Bisulfate)

Instrument: NT5 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0480-BLK1)						Prepared: 18-May-2022 Analyzed: 18-May-2022 10:23					
2-Hexanone	ND	1.27	5.00	ug/kg							U
1,1,2-Trichloroethane	ND	0.27	1.00	ug/kg							U
1,3-Dichloropropane	ND	0.23	1.00	ug/kg							U
Tetrachloroethene	ND	0.20	1.00	ug/kg							U
Dibromochloromethane	ND	0.27	1.00	ug/kg							U
1,2-Dibromoethane	ND	0.31	1.00	ug/kg							U
Chlorobenzene	ND	0.21	1.00	ug/kg							U
Ethylbenzene	ND	0.23	1.00	ug/kg							U
1,1,1,2-Tetrachloroethane	ND	0.35	1.00	ug/kg							U
m,p-Xylene	ND	0.49	2.00	ug/kg							U
o-Xylene	ND	0.24	1.00	ug/kg							U
Xylenes, total	ND	0.70	2.00	ug/kg							U
Styrene	ND	0.25	1.00	ug/kg							U
Bromoform	ND	0.46	1.00	ug/kg							U
1,1,2,2-Tetrachloroethane	ND	0.27	1.00	ug/kg							U
1,2,3-Trichloropropane	ND	1.50	2.00	ug/kg							U
trans-1,4-Dichloro 2-Butene	ND	2.75	5.00	ug/kg							U
n-Propylbenzene	ND	0.24	1.00	ug/kg							U
Bromobenzene	ND	0.25	1.00	ug/kg							U
Isopropyl Benzene	ND	0.26	1.00	ug/kg							U
2-Chlorotoluene	ND	0.22	1.00	ug/kg							U
4-Chlorotoluene	ND	0.29	1.00	ug/kg							U
t-Butylbenzene	ND	0.25	1.00	ug/kg							U
1,3,5-Trimethylbenzene	ND	0.25	1.00	ug/kg							U
1,2,4-Trimethylbenzene	ND	0.27	1.00	ug/kg							U
s-Butylbenzene	ND	0.24	1.00	ug/kg							U
4-Isopropyl Toluene	ND	0.29	1.00	ug/kg							U
1,3-Dichlorobenzene	ND	0.24	1.00	ug/kg							U
1,4-Dichlorobenzene	ND	0.43	1.00	ug/kg							U
n-Butylbenzene	ND	0.28	1.00	ug/kg							U
1,2-Dichlorobenzene	ND	0.65	1.00	ug/kg							U
1,2-Dibromo-3-chloropropane	ND	2.36	5.00	ug/kg							U
1,2,4-Trichlorobenzene	ND	1.82	5.00	ug/kg							U
Hexachloro-1,3-Butadiene	ND	1.80	5.00	ug/kg							U
Naphthalene	ND	2.46	5.00	ug/kg							U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0480 - EPA 5035 (Sodium Bisulfate)

Instrument: NT5 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0480-BLK1)											
						Prepared: 18-May-2022 Analyzed: 18-May-2022 10:23					
1,2,3-Trichlorobenzene	ND	2.32	5.00	ug/kg							U
Dichlorodifluoromethane	ND	0.40	1.00	ug/kg							U
Methyl tert-butyl Ether	ND	0.25	1.00	ug/kg							U
2-Pentanone	ND	2.15	5.00	ug/kg							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	49.4			ug/kg	50.0		98.8	80-149			
<i>Surrogate: Toluene-d8</i>	50.7			ug/kg	50.0		101	77-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	48.7			ug/kg	50.0		97.5	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	50.0			ug/kg	50.0		99.9	80-120			
LCS (BKE0480-BS1)											
						Prepared: 18-May-2022 Analyzed: 18-May-2022 09:20					
Chloromethane	47.2			ug/kg	50.0		94.4	64-132			
Vinyl Chloride	52.9			ug/kg	50.0		106	74-135			
Bromomethane	47.6			ug/kg	50.0		95.3	53-144			
Chloroethane	49.9			ug/kg	50.0		99.7	55-149			
Trichlorofluoromethane	53.3			ug/kg	50.0		107	61-164			
Acrolein	242			ug/kg	250		96.8	59-140			
1,1,2-Trichloro-1,2,2-Trifluoroethane	53.7			ug/kg	50.0		107	74-143			
Acetone	244			ug/kg	250		97.4	48-137			
1,1-Dichloroethene	50.1			ug/kg	50.0		100	77-134			
Iodomethane	55.7			ug/kg	50.0		111	31-162			
Methylene Chloride	48.0			ug/kg	50.0		95.9	69-129			
Acrylonitrile	44.7			ug/kg	50.0		89.4	69-134			
Carbon Disulfide	51.5			ug/kg	50.0		103	71-137			
trans-1,2-Dichloroethene	50.2			ug/kg	50.0		100	79-130			
Vinyl Acetate	48.1			ug/kg	50.0		96.2	66-141			
1,1-Dichloroethane	49.1			ug/kg	50.0		98.2	80-126			
2-Butanone	222			ug/kg	250		88.6	70-132			
2,2-Dichloropropane	51.8			ug/kg	50.0		104	77-138			
cis-1,2-Dichloroethene	47.9			ug/kg	50.0		95.7	80-125			
Chloroform	51.2			ug/kg	50.0		102	80-126			
Bromochloromethane	52.0			ug/kg	50.0		104	80-129			
1,1,1-Trichloroethane	51.6			ug/kg	50.0		103	78-133			
1,1-Dichloropropene	50.7			ug/kg	50.0		101	63-145			
Carbon tetrachloride	52.7			ug/kg	50.0		105	71-129			
1,2-Dichloroethane	45.5			ug/kg	50.0		91.1	76-120			



Aspect Consulting, LLC.
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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0480 - EPA 5035 (Sodium Bisulfate)

Instrument: NT5 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKE0480-BS1)											
						Prepared: 18-May-2022 Analyzed: 18-May-2022 09:20					
Benzene	50.2			ug/kg	50.0		100	80-120			
Trichloroethene	50.3			ug/kg	50.0		101	80-120			
1,2-Dichloropropane	47.7			ug/kg	50.0		95.3	79-120			
Bromodichloromethane	48.9			ug/kg	50.0		97.8	80-122			
Dibromomethane	46.1			ug/kg	50.0		92.1	80-120			
2-Chloroethyl vinyl ether	45.7			ug/kg	50.0		91.5	51-129			
4-Methyl-2-Pentanone	228			ug/kg	250		91.3	73-121			
cis-1,3-Dichloropropene	48.2			ug/kg	50.0		96.4	80-120			
Toluene	48.7			ug/kg	50.0		97.3	75-120			
trans-1,3-Dichloropropene	49.3			ug/kg	50.0		98.6	80-124			
2-Hexanone	240			ug/kg	250		95.9	68-122			
1,1,2-Trichloroethane	45.7			ug/kg	50.0		91.4	79-120			
1,3-Dichloropropane	48.5			ug/kg	50.0		97.0	78-120			
Tetrachloroethene	52.1			ug/kg	50.0		104	74-124			
Dibromochloromethane	49.1			ug/kg	50.0		98.1	74-125			
1,2-Dibromoethane	46.4			ug/kg	50.0		92.7	80-120			
Chlorobenzene	51.0			ug/kg	50.0		102	78-120			
Ethylbenzene	53.8			ug/kg	50.0		108	80-125			
1,1,1,2-Tetrachloroethane	51.8			ug/kg	50.0		104	80-120			
m,p-Xylene	106			ug/kg	100		106	76-121			
o-Xylene	51.4			ug/kg	50.0		103	67-132			
Xylenes, total	158			ug/kg	150		105	67-132			
Styrene	51.9			ug/kg	50.0		104	80-120			
Bromoform	52.2			ug/kg	50.0		104	64-128			
1,1,2,2-Tetrachloroethane	48.9			ug/kg	50.0		97.9	74-120			
1,2,3-Trichloropropane	49.6			ug/kg	50.0		99.2	73-120			
trans-1,4-Dichloro 2-Butene	50.2			ug/kg	50.0		100	65-125			
n-Propylbenzene	56.6			ug/kg	50.0		113	72-124			
Bromobenzene	51.7			ug/kg	50.0		103	76-120			
Isopropyl Benzene	55.2			ug/kg	50.0		110	74-121			
2-Chlorotoluene	53.7			ug/kg	50.0		107	75-120			
4-Chlorotoluene	54.6			ug/kg	50.0		109	69-124			
t-Butylbenzene	54.7			ug/kg	50.0		109	72-122			
1,3,5-Trimethylbenzene	54.8			ug/kg	50.0		110	74-122			
1,2,4-Trimethylbenzene	55.4			ug/kg	50.0		111	75-121			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0480 - EPA 5035 (Sodium Bisulfate)

Instrument: NT5 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKE0480-BS1)					Prepared: 18-May-2022 Analyzed: 18-May-2022 09:20						
s-Butylbenzene	56.2			ug/kg	50.0		112	70-128			
4-Isopropyl Toluene	56.7			ug/kg	50.0		113	75-125			
1,3-Dichlorobenzene	53.5			ug/kg	50.0		107	75-120			
1,4-Dichlorobenzene	52.3			ug/kg	50.0		105	73-120			
n-Butylbenzene	57.9			ug/kg	50.0		116	73-130			
1,2-Dichlorobenzene	50.5			ug/kg	50.0		101	76-120			
1,2-Dibromo-3-chloropropane	48.2			ug/kg	50.0		96.3	72-136			
1,2,4-Trichlorobenzene	55.2			ug/kg	50.0		110	66-140			
Hexachloro-1,3-Butadiene	54.7			ug/kg	50.0		109	67-133			
Naphthalene	49.9			ug/kg	50.0		99.7	69-125			
1,2,3-Trichlorobenzene	52.1			ug/kg	50.0		104	68-132			
Dichlorodifluoromethane	54.8			ug/kg	50.0		110	67-142			
Methyl tert-butyl Ether	45.9			ug/kg	50.0		91.8	79-127			
n-Hexane	59.7			ug/kg	50.0		119	30-160			
2-Pentanone	231			ug/kg	250		92.4	77-120			
Surrogate: 1,2-Dichloroethane-d4	47.2			ug/kg	50.0	94.4		80-149			
Surrogate: Toluene-d8	49.5			ug/kg	50.0	98.9		77-120			
Surrogate: 4-Bromofluorobenzene	49.1			ug/kg	50.0	98.2		80-120			
Surrogate: 1,2-Dichlorobenzene-d4	50.4			ug/kg	50.0	101		80-120			
LCS Dup (BKE0480-BS1)					Prepared: 18-May-2022 Analyzed: 18-May-2022 09:58						
Chloromethane	47.9			ug/kg	50.0		95.7	64-132	1.35	30	
Vinyl Chloride	54.6			ug/kg	50.0		109	74-135	3.17	30	
Bromomethane	52.3			ug/kg	50.0		105	53-144	9.35	30	
Chloroethane	51.5			ug/kg	50.0		103	55-149	3.12	30	
Trichlorofluoromethane	56.2			ug/kg	50.0		112	61-164	5.21	30	
Acrolein	258			ug/kg	250		103	59-140	6.21	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	54.7			ug/kg	50.0		109	74-143	1.91	30	
Acetone	266			ug/kg	250		106	48-137	8.70	30	
1,1-Dichloroethene	52.3			ug/kg	50.0		105	77-134	4.35	30	
Iodomethane	55.4			ug/kg	50.0		111	31-162	0.57	30	
Methylene Chloride	50.5			ug/kg	50.0		101	69-129	5.13	30	
Acrylonitrile	47.0			ug/kg	50.0		94.1	69-134	5.08	30	
Carbon Disulfide	53.5			ug/kg	50.0		107	71-137	3.80	30	
trans-1,2-Dichloroethene	53.0			ug/kg	50.0		106	79-130	5.59	30	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0480 - EPA 5035 (Sodium Bisulfate)

Instrument: NT5 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKE0480-BSD1)					Prepared: 18-May-2022 Analyzed: 18-May-2022 09:58						
Vinyl Acetate	50.4			ug/kg	50.0		101	66-141	4.59	30	
1,1-Dichloroethane	51.7			ug/kg	50.0		103	80-126	5.11	30	
2-Butanone	235			ug/kg	250		93.9	70-132	5.82	30	
2,2-Dichloropropane	53.4			ug/kg	50.0		107	77-138	3.00	30	
cis-1,2-Dichloroethene	51.3			ug/kg	50.0		103	80-125	7.01	30	
Chloroform	52.9			ug/kg	50.0		106	80-126	3.43	30	
Bromochloromethane	54.2			ug/kg	50.0		108	80-129	4.21	30	
1,1,1-Trichloroethane	54.1			ug/kg	50.0		108	78-133	4.73	30	
1,1-Dichloropropene	50.9			ug/kg	50.0		102	63-145	0.43	30	
Carbon tetrachloride	53.0			ug/kg	50.0		106	71-129	0.62	30	
1,2-Dichloroethane	45.8			ug/kg	50.0		91.6	76-120	0.58	30	
Benzene	50.6			ug/kg	50.0		101	80-120	0.79	30	
Trichloroethene	50.6			ug/kg	50.0		101	80-120	0.67	30	
1,2-Dichloropropane	48.1			ug/kg	50.0		96.2	79-120	0.97	30	
Bromodichloromethane	48.1			ug/kg	50.0		96.1	80-122	1.77	30	
Dibromomethane	47.1			ug/kg	50.0		94.3	80-120	2.33	30	
2-Chloroethyl vinyl ether	44.7			ug/kg	50.0		89.4	51-129	2.36	30	
4-Methyl-2-Pentanone	223			ug/kg	250		89.3	73-121	2.17	30	
cis-1,3-Dichloropropene	48.9			ug/kg	50.0		97.9	80-120	1.52	30	
Toluene	49.1			ug/kg	50.0		98.1	75-120	0.83	30	
trans-1,3-Dichloropropene	49.1			ug/kg	50.0		98.2	80-124	0.43	30	
2-Hexanone	229			ug/kg	250		91.6	68-122	4.58	30	
1,1,2-Trichloroethane	46.5			ug/kg	50.0		93.0	79-120	1.75	30	
1,3-Dichloropropane	47.7			ug/kg	50.0		95.4	78-120	1.60	30	
Tetrachloroethene	50.9			ug/kg	50.0		102	74-124	2.31	30	
Dibromochloromethane	47.9			ug/kg	50.0		95.8	74-125	2.35	30	
1,2-Dibromoethane	45.7			ug/kg	50.0		91.3	80-120	1.51	30	
Chlorobenzene	49.6			ug/kg	50.0		99.2	78-120	2.84	30	
Ethylbenzene	52.5			ug/kg	50.0		105	80-125	2.51	30	
1,1,1,2-Tetrachloroethane	50.9			ug/kg	50.0		102	80-120	1.86	30	
m,p-Xylene	105			ug/kg	100		105	76-121	1.54	30	
o-Xylene	50.2			ug/kg	50.0		100	67-132	2.37	30	
Xylenes, total	155			ug/kg	150		103	67-132	1.81	30	
Styrene	50.2			ug/kg	50.0		100	80-120	3.23	30	
Bromoform	49.4			ug/kg	50.0		98.9	64-128	5.53	30	



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0480 - EPA 5035 (Sodium Bisulfate)

Instrument: NT5 Analyst: PB

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKE0480-BSD1)					Prepared: 18-May-2022 Analyzed: 18-May-2022 09:58						
1,1,2,2-Tetrachloroethane	45.9			ug/kg	50.0		91.7	74-120	6.49	30	
1,2,3-Trichloropropane	46.8			ug/kg	50.0		93.5	73-120	5.93	30	
trans-1,4-Dichloro 2-Butene	46.1			ug/kg	50.0		92.3	65-125	8.52	30	
n-Propylbenzene	53.8			ug/kg	50.0		108	72-124	5.06	30	
Bromobenzene	49.9			ug/kg	50.0		99.8	76-120	3.59	30	
Isopropyl Benzene	53.4			ug/kg	50.0		107	74-121	3.18	30	
2-Chlorotoluene	52.0			ug/kg	50.0		104	75-120	3.21	30	
4-Chlorotoluene	52.5			ug/kg	50.0		105	69-124	3.85	30	
t-Butylbenzene	51.9			ug/kg	50.0		104	72-122	5.15	30	
1,3,5-Trimethylbenzene	52.6			ug/kg	50.0		105	74-122	3.97	30	
1,2,4-Trimethylbenzene	53.0			ug/kg	50.0		106	75-121	4.48	30	
s-Butylbenzene	53.7			ug/kg	50.0		107	70-128	4.56	30	
4-Isopropyl Toluene	54.1			ug/kg	50.0		108	75-125	4.66	30	
1,3-Dichlorobenzene	51.4			ug/kg	50.0		103	75-120	4.13	30	
1,4-Dichlorobenzene	50.6			ug/kg	50.0		101	73-120	3.33	30	
n-Butylbenzene	55.3			ug/kg	50.0		111	73-130	4.53	30	
1,2-Dichlorobenzene	48.3			ug/kg	50.0		96.6	76-120	4.50	30	
1,2-Dibromo-3-chloropropane	42.9			ug/kg	50.0		85.8	72-136	11.60	30	
1,2,4-Trichlorobenzene	53.4			ug/kg	50.0		107	66-140	3.34	30	
Hexachloro-1,3-Butadiene	51.7			ug/kg	50.0		103	67-133	5.59	30	
Naphthalene	46.9			ug/kg	50.0		93.7	69-125	6.19	30	
1,2,3-Trichlorobenzene	49.2			ug/kg	50.0		98.5	68-132	5.59	30	
Dichlorodifluoromethane	56.8			ug/kg	50.0		114	67-142	3.63	30	
Methyl tert-butyl Ether	48.1			ug/kg	50.0		96.2	79-127	4.71	30	
n-Hexane	62.0			ug/kg	50.0		124	30-160	3.71	30	
2-Pentanone	227			ug/kg	250		90.9	77-120	1.59	30	
Surrogate: 1,2-Dichloroethane-d4	50.0			ug/kg	50.0		100	80-149			
Surrogate: Toluene-d8	50.2			ug/kg	50.0		100	77-120			
Surrogate: 4-Bromofluorobenzene	48.7			ug/kg	50.0		97.3	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	49.8			ug/kg	50.0		99.5	80-120			



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0465 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0465-BLK1)						Prepared: 20-May-2022 Analyzed: 07-Jun-2022 12:10					
Phenol	ND	4.4	20.0	ug/kg							U
bis(2-chloroethyl) ether	ND	19.3	50.0	ug/kg							U
2-Chlorophenol	ND	13.9	20.0	ug/kg							U
1,3-Dichlorobenzene	ND	3.1	20.0	ug/kg							U
1,4-Dichlorobenzene	ND	3.1	20.0	ug/kg							U
1,2-Dichlorobenzene	ND	2.4	20.0	ug/kg							U
Benzyl Alcohol	ND	16.3	20.0	ug/kg							U
2,2'-Oxybis(1-chloropropane)	ND	3.4	20.0	ug/kg							U
2-Methylphenol	ND	6.7	20.0	ug/kg							U
Hexachloroethane	ND	3.5	20.0	ug/kg							U
N-Nitroso-di-n-Propylamine	ND	7.5	20.0	ug/kg							U
4-Methylphenol	ND	7.4	20.0	ug/kg							U
Nitrobenzene	ND	7.2	20.0	ug/kg							U
Isophorone	ND	3.9	20.0	ug/kg							U
2-Nitrophenol	ND	4.9	20.0	ug/kg							U
2,4-Dimethylphenol	ND	3.8	100	ug/kg							U
Bis(2-Chloroethoxy)methane	ND	4.3	20.0	ug/kg							U
2,4-Dichlorophenol	ND	15.3	100	ug/kg							U
1,2,4-Trichlorobenzene	ND	3.6	20.0	ug/kg							U
Naphthalene	ND	4.2	20.0	ug/kg							U
Benzoic acid	ND	39.0	200	ug/kg							U
4-Chloroaniline	ND	8.4	100	ug/kg							U
Hexachlorobutadiene	ND	4.8	20.0	ug/kg							U
4-Chloro-3-Methylphenol	ND	12.4	100	ug/kg							U
2-Methylnaphthalene	ND	4.5	20.0	ug/kg							U
Hexachlorocyclopentadiene	ND	24.5	100	ug/kg							U
2,4,6-Trichlorophenol	ND	9.0	100	ug/kg							U
2,4,5-Trichlorophenol	ND	25.8	100	ug/kg							U
2-Chloronaphthalene	ND	8.0	20.0	ug/kg							U
2-Nitroaniline	ND	16.4	100	ug/kg							U
Acenaphthylene	ND	6.2	20.0	ug/kg							U
Dimethylphthalate	ND	4.4	20.0	ug/kg							U
2,6-Dinitrotoluene	ND	20.5	100	ug/kg							U
Acenaphthene	ND	5.2	20.0	ug/kg							U
3-Nitroaniline	ND	22.3	100	ug/kg							U



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0465 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0465-BLK1)											
						Prepared: 20-May-2022 Analyzed: 07-Jun-2022 12:10					
2,4-Dinitrophenol	ND	33.8	200	ug/kg							U
Dibenzofuran	ND	14.1	20.0	ug/kg							U
4-Nitrophenol	ND	32.6	100	ug/kg							U
2,4-Dinitrotoluene	ND	16.2	100	ug/kg							U
Fluorene	ND	14.6	20.0	ug/kg							U
4-Chlorophenylphenyl ether	ND	19.2	50.0	ug/kg							U
Diethyl phthalate	ND	19.7	50.0	ug/kg							U
4-Nitroaniline	ND	29.4	100	ug/kg							U
4,6-Dinitro-2-methylphenol	ND	38.0	200	ug/kg							U
N-Nitrosodiphenylamine	ND	5.3	20.0	ug/kg							U
4-Bromophenyl phenyl ether	ND	17.0	20.0	ug/kg							U
Hexachlorobenzene	ND	13.5	20.0	ug/kg							U
Pentachlorophenol	ND	31.3	100	ug/kg							U
Phenanthrene	ND	8.7	20.0	ug/kg							U
Anthracene	ND	7.2	20.0	ug/kg							U
Carbazole	ND	4.3	20.0	ug/kg							U
Di-n-Butylphthalate	ND	5.6	20.0	ug/kg							U
Fluoranthene	ND	6.1	20.0	ug/kg							U
Pyrene	ND	5.7	20.0	ug/kg							U
Butylbenzylphthalate	ND	9.4	20.0	ug/kg							U
Benzo(a)anthracene	ND	6.0	20.0	ug/kg							U
3,3'-Dichlorobenzidine	ND	7.1	100	ug/kg							U
Chrysene	ND	6.1	20.0	ug/kg							U
bis(2-Ethylhexyl)phthalate	5.6	5.5	50.0	ug/kg							J
Di-n-Octylphthalate	ND	4.4	20.0	ug/kg							U
Benzo(a)fluoranthene, Total	ND	10.0	40.0	ug/kg							U
Benzo(a)pyrene	ND	4.2	20.0	ug/kg							U
Indeno(1,2,3-cd)pyrene	ND	14.7	20.0	ug/kg							U
Dibenzo(a,h)anthracene	ND	17.2	20.0	ug/kg							U
Benzo(g,h,i)perylene	ND	13.6	20.0	ug/kg							U
1-Methylnaphthalene	ND	5.3	20.0	ug/kg							U
Surrogate: 2-Fluorophenol	459			ug/kg	750		61.2	27-120			
Surrogate: Phenol-d5	467			ug/kg	750		62.3	29-120			
Surrogate: 2-Chlorophenol-d4	562			ug/kg	750		74.9	31-120			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0465 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0465-BLK1)						Prepared: 20-May-2022 Analyzed: 07-Jun-2022 12:10					
Surrogate: 1,2-Dichlorobenzene-d4	399			ug/kg	500		79.8	32-120			
Surrogate: Nitrobenzene-d5	410			ug/kg	500		82.0	30-120			
Surrogate: 2-Fluorobiphenyl	416			ug/kg	500		83.2	35-120			
Surrogate: 2,4,6-Tribromophenol	624			ug/kg	750		83.2	24-134			
Surrogate: p-Terphenyl-d14	394			ug/kg	500		78.9	37-120			
LCS (BKE0465-BS1)						Prepared: 20-May-2022 Analyzed: 07-Jun-2022 12:49					
Phenol	435	4.4	20.0	ug/kg	500		87.0	34-120			
bis(2-chloroethyl) ether	462	19.3	50.0	ug/kg	500		92.5	36-120			
2-Chlorophenol	454	13.9	20.0	ug/kg	500		90.7	39-120			
1,3-Dichlorobenzene	399	3.1	20.0	ug/kg	500		79.7	40-120			
1,4-Dichlorobenzene	469	3.1	20.0	ug/kg	500		93.8	39-120			
1,2-Dichlorobenzene	413	2.4	20.0	ug/kg	500		82.7	40-120			
Benzyl Alcohol	453	16.3	20.0	ug/kg	500		90.6	19-120			
2,2'-Oxybis(1-chloropropane)	472	3.4	20.0	ug/kg	500		94.4	32-120			
2-Methylphenol	405	6.7	20.0	ug/kg	500		81.1	28-120			
Hexachloroethane	506	3.5	20.0	ug/kg	500		101	38-120			
N-Nitroso-di-n-Propylamine	324	7.5	20.0	ug/kg	500		64.8	34-120			
4-Methylphenol	437	7.4	20.0	ug/kg	500		87.3	29-120			
Nitrobenzene	473	7.2	20.0	ug/kg	500		94.6	36-120			
Isophorone	599	3.9	20.0	ug/kg	500		120	37-120			
2-Nitrophenol	498	4.9	20.0	ug/kg	500		99.6	30-120			
2,4-Dimethylphenol	588	3.8	100	ug/kg	1300		45.2	10-120			
Bis(2-Chloroethoxy)methane	445	4.3	20.0	ug/kg	500		88.9	39-120			
2,4-Dichlorophenol	1290	15.3	100	ug/kg	1300		99.1	28-120			
1,2,4-Trichlorobenzene	362	3.6	20.0	ug/kg	500		72.3	35-120			
Naphthalene	419	4.2	20.0	ug/kg	500		83.9	43-120			
Benzoic acid	2210	39.0	200	ug/kg	2300		96.0	10-120			
4-Chloroaniline	697	8.4	100	ug/kg	1300		53.6	11-120			
Hexachlorobutadiene	396	4.8	20.0	ug/kg	500		79.1	37-120			
4-Chloro-3-Methylphenol	1430	12.4	100	ug/kg	1300		110	32-120			
2-Methylnaphthalene	477	4.5	20.0	ug/kg	500		95.3	43-120			
Hexachlorocyclopentadiene	651	24.5	100	ug/kg	1300		50.1	10-120			
2,4,6-Trichlorophenol	1330	9.0	100	ug/kg	1300		102	44.6-132			
2,4,5-Trichlorophenol	1370	25.8	100	ug/kg	1300		106	51.5-129			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0465 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKE0465-BS1)						Prepared: 20-May-2022 Analyzed: 07-Jun-2022 12:49					
2-Chloronaphthalene	449	8.0	20.0	ug/kg	500		89.7	40-120			
2-Nitroaniline	1500	16.4	100	ug/kg	1300		116	40-152			Q
Acenaphthylene	370	6.2	20.0	ug/kg	500		74.1	42-120			
Dimethylphthalate	452	4.4	20.0	ug/kg	500		90.3	43-120			
2,6-Dinitrotoluene	1320	20.5	100	ug/kg	1300		101	31-156			
Acenaphthene	430	5.2	20.0	ug/kg	500		85.9	45-120			
3-Nitroaniline	1060	22.3	100	ug/kg	1300		81.7	22-120			
2,4-Dinitrophenol	2520	33.8	200	ug/kg	2300		110	10-120			
Dibenzofuran	480	14.1	20.0	ug/kg	500		95.9	43-120			
4-Nitrophenol	1360	32.6	100	ug/kg	1300		105	15-138			
2,4-Dinitrotoluene	1260	16.2	100	ug/kg	1300		96.6	44-150			
Fluorene	414	14.6	20.0	ug/kg	500		82.9	45-120			
4-Chlorophenylphenyl ether	382	19.2	50.0	ug/kg	500		76.4	36-141			
Diethyl phthalate	470	19.7	50.0	ug/kg	500		94.0	50-120			
4-Nitroaniline	1050	29.4	100	ug/kg	1300		80.8	24-168			
4,6-Dinitro-2-methylphenol	2690	38.0	200	ug/kg	2300		117	33-144			
N-Nitrosodiphenylamine	420	5.3	20.0	ug/kg	500		84.0	70-154			
4-Bromophenyl phenyl ether	487	17.0	20.0	ug/kg	500		97.5	39-120			
Hexachlorobenzene	472	13.5	20.0	ug/kg	500		94.4	33-120			
Pentachlorophenol	1240	31.3	100	ug/kg	1300		95.3	16-120			
Phenanthrene	438	8.7	20.0	ug/kg	500		87.5	49-120			
Anthracene	406	7.2	20.0	ug/kg	500		81.1	45-120			
Carbazole	467	4.3	20.0	ug/kg	500		93.4	43-135			
Di-n-Butylphthalate	537	5.6	20.0	ug/kg	500		107	48-126			
Fluoranthene	441	6.1	20.0	ug/kg	500		88.3	53-145			
Pyrene	443	5.7	20.0	ug/kg	500		88.5	52-134			Q
Butylbenzylphthalate	450	9.4	20.0	ug/kg	500		90.0	45-132			
Benzo(a)anthracene	410	6.0	20.0	ug/kg	500		81.9	49-120			
3,3'-Dichlorobenzidine	761	7.1	100	ug/kg	1300		58.6	10-120			
Chrysene	414	6.1	20.0	ug/kg	500		82.9	47-120			
bis(2-Ethylhexyl)phthalate	483	5.5	50.0	ug/kg	500		96.5	34-130			
Di-n-Octylphthalate	450	4.4	20.0	ug/kg	500		90.0	28-124			
Benzo(a)fluoranthene, Total	868	10.0	40.0	ug/kg	1000		86.8	30-160			
Benzo(a)pyrene	387	4.2	20.0	ug/kg	500		77.5	42-120			
Indeno(1,2,3-cd)pyrene	422	14.7	20.0	ug/kg	500		84.4	42-163			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0465 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKE0465-BS1)						Prepared: 20-May-2022 Analyzed: 07-Jun-2022 12:49					
Dibenzo(a,h)anthracene	416	17.2	20.0	ug/kg	500		83.2	30-133			
Benzo(g,h,i)perylene	427	13.6	20.0	ug/kg	500		85.5	46-148			
1-Methylnaphthalene	501	5.3	20.0	ug/kg	500		100	42-120			
Surrogate: 2-Fluorophenol	662			ug/kg	750		88.2	27-120			
Surrogate: Phenol-d5	706			ug/kg	750		94.2	29-120			
Surrogate: 2-Chlorophenol-d4	696			ug/kg	750		92.8	31-120			
Surrogate: 1,2-Dichlorobenzene-d4	466			ug/kg	500		93.1	32-120			
Surrogate: Nitrobenzene-d5	522			ug/kg	500		104	30-120			
Surrogate: 2-Fluorobiphenyl	497			ug/kg	500		99.3	35-120			
Surrogate: 2,4,6-Tribromophenol	842			ug/kg	750		112	24-134			
Surrogate: p-Terphenyl-d14	461			ug/kg	500		92.2	37-120			
LCS Dup (BKE0465-BSD1)						Prepared: 20-May-2022 Analyzed: 07-Jun-2022 13:28					
Phenol	440	4.4	20.0	ug/kg	500		88.1	34-120	1.21	30	
bis(2-chloroethyl) ether	465	19.3	50.0	ug/kg	500		93.1	36-120	0.62	30	
2-Chlorophenol	457	13.9	20.0	ug/kg	500		91.3	39-120	0.64	30	
1,3-Dichlorobenzene	398	3.1	20.0	ug/kg	500		79.5	40-120	0.29	30	
1,4-Dichlorobenzene	467	3.1	20.0	ug/kg	500		93.3	39-120	0.55	30	
1,2-Dichlorobenzene	415	2.4	20.0	ug/kg	500		83.0	40-120	0.35	30	
Benzyl Alcohol	458	16.3	20.0	ug/kg	500		91.7	19-120	1.21	30	
2,2'-Oxybis(1-chloropropane)	479	3.4	20.0	ug/kg	500		95.8	32-120	1.45	30	
2-Methylphenol	401	6.7	20.0	ug/kg	500		80.1	28-120	1.17	30	
Hexachloroethane	500	3.5	20.0	ug/kg	500		100	38-120	1.12	30	
N-Nitroso-di-n-Propylamine	329	7.5	20.0	ug/kg	500		65.8	34-120	1.52	30	
4-Methylphenol	439	7.4	20.0	ug/kg	500		87.8	29-120	0.53	30	
Nitrobenzene	477	7.2	20.0	ug/kg	500		95.3	36-120	0.76	30	
Isophorone	594	3.9	20.0	ug/kg	500		119	37-120	0.86	30	
2-Nitrophenol	510	4.9	20.0	ug/kg	500		102	30-120	2.39	30	
2,4-Dimethylphenol	541	3.8	100	ug/kg	1300		41.6	10-120	8.40	30	
Bis(2-Chloroethoxy)methane	436	4.3	20.0	ug/kg	500		87.3	39-120	1.86	30	
2,4-Dichlorophenol	1250	15.3	100	ug/kg	1300		96.4	28-120	2.77	30	
1,2,4-Trichlorobenzene	361	3.6	20.0	ug/kg	500		72.3	35-120	0.10	30	
Naphthalene	408	4.2	20.0	ug/kg	500		81.7	43-120	2.60	30	
Benzoic acid	2180	39.0	200	ug/kg	2300		94.9	10-120	1.19	30	
4-Chloroaniline	696	8.4	100	ug/kg	1300		53.5	11-120	0.19	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0465 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKE0465-BS1)						Prepared: 20-May-2022 Analyzed: 07-Jun-2022 13:28					
Hexachlorobutadiene	387	4.8	20.0	ug/kg	500		77.3	37-120	2.33	30	
4-Chloro-3-Methylphenol	1380	12.4	100	ug/kg	1300		106	32-120	3.29	30	
2-Methylnaphthalene	463	4.5	20.0	ug/kg	500		92.7	43-120	2.80	30	
Hexachlorocyclopentadiene	670	24.5	100	ug/kg	1300		51.5	10-120	2.84	30	
2,4,6-Trichlorophenol	1320	9.0	100	ug/kg	1300		102	44.6-132	0.79	30	
2,4,5-Trichlorophenol	1360	25.8	100	ug/kg	1300		105	51.5-129	0.95	30	
2-Chloronaphthalene	450	8.0	20.0	ug/kg	500		89.9	40-120	0.23	30	
2-Nitroaniline	1480	16.4	100	ug/kg	1300		114	40-152	1.72	30	Q
Acenaphthylene	369	6.2	20.0	ug/kg	500		73.9	42-120	0.26	30	
Dimethylphthalate	433	4.4	20.0	ug/kg	500		86.6	43-120	4.22	30	
2,6-Dinitrotoluene	1280	20.5	100	ug/kg	1300		98.3	31-156	3.18	30	
Acenaphthene	426	5.2	20.0	ug/kg	500		85.3	45-120	0.75	30	
3-Nitroaniline	1030	22.3	100	ug/kg	1300		79.4	22-120	2.93	30	
2,4-Dinitrophenol	2560	33.8	200	ug/kg	2300		111	10-120	1.41	30	
Dibenzofuran	483	14.1	20.0	ug/kg	500		96.7	43-120	0.76	30	
4-Nitrophenol	1350	32.6	100	ug/kg	1300		103	15-138	1.10	30	
2,4-Dinitrotoluene	1220	16.2	100	ug/kg	1300		93.7	44-150	3.02	30	
Fluorene	412	14.6	20.0	ug/kg	500		82.3	45-120	0.70	30	
4-Chlorophenylphenyl ether	433	19.2	50.0	ug/kg	500		86.5	36-141	12.40	30	
Diethyl phthalate	513	19.7	50.0	ug/kg	500		103	50-120	8.74	30	
4-Nitroaniline	999	29.4	100	ug/kg	1300		76.9	24-168	5.03	30	
4,6-Dinitro-2-methylphenol	2660	38.0	200	ug/kg	2300		116	33-144	0.96	30	
N-Nitrosodiphenylamine	420	5.3	20.0	ug/kg	500		84.0	70-154	0.06	30	
4-Bromophenyl phenyl ether	476	17.0	20.0	ug/kg	500		95.3	39-120	2.28	30	
Hexachlorobenzene	460	13.5	20.0	ug/kg	500		92.0	33-120	2.60	30	
Pentachlorophenol	1240	31.3	100	ug/kg	1300		95.6	16-120	0.36	30	
Phenanthrene	429	8.7	20.0	ug/kg	500		85.8	49-120	1.93	30	
Anthracene	402	7.2	20.0	ug/kg	500		80.5	45-120	0.76	30	
Carbazole	453	4.3	20.0	ug/kg	500		90.6	43-135	3.05	30	
Di-n-Butylphthalate	523	5.6	20.0	ug/kg	500		105	48-126	2.65	30	
Fluoranthene	428	6.1	20.0	ug/kg	500		85.6	53-145	3.04	30	
Pyrene	465	5.7	20.0	ug/kg	500		92.9	52-134	4.86	30	Q
Butylbenzylphthalate	437	9.4	20.0	ug/kg	500		87.4	45-132	2.97	30	
Benzo(a)anthracene	402	6.0	20.0	ug/kg	500		80.3	49-120	1.97	30	
3,3'-Dichlorobenzidine	741	7.1	100	ug/kg	1300		57.0	10-120	2.75	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Semivolatle Organic Compounds - Quality Control

Batch BKE0465 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: YZ

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKE0465-BSD1)					Prepared: 20-May-2022 Analyzed: 07-Jun-2022 13:28						
Chrysene	407	6.1	20.0	ug/kg	500		81.3	47-120	1.91	30	
bis(2-Ethylhexyl)phthalate	465	5.5	50.0	ug/kg	500		92.9	34-130	3.80	30	
Di-n-Octylphthalate	433	4.4	20.0	ug/kg	500		86.6	28-124	3.80	30	
Benzo[fluoranthenes, Total	840	10.0	40.0	ug/kg	1000		84.0	30-160	3.21	30	
Benzo(a)pyrene	377	4.2	20.0	ug/kg	500		75.4	42-120	2.72	30	
Indeno(1,2,3-cd)pyrene	410	14.7	20.0	ug/kg	500		81.9	42-163	2.93	30	
Dibenzo(a,h)anthracene	405	17.2	20.0	ug/kg	500		80.9	30-133	2.79	30	
Benzo(g,h,i)perylene	423	13.6	20.0	ug/kg	500		84.7	46-148	0.93	30	
1-Methylnaphthalene	506	5.3	20.0	ug/kg	500		101	42-120	1.03	30	
Surrogate: 2-Fluorophenol	613			ug/kg	750		81.7	27-120			
Surrogate: Phenol-d5	661			ug/kg	750		88.1	29-120			
Surrogate: 2-Chlorophenol-d4	641			ug/kg	750		85.4	31-120			
Surrogate: 1,2-Dichlorobenzene-d4	422			ug/kg	500		84.4	32-120			
Surrogate: Nitrobenzene-d5	477			ug/kg	500		95.3	30-120			
Surrogate: 2-Fluorobiphenyl	448			ug/kg	500		89.6	35-120			
Surrogate: 2,4,6-Tribromophenol	732			ug/kg	750		97.6	24-134			
Surrogate: p-Terphenyl-d14	415			ug/kg	500		82.9	37-120			
Matrix Spike (BKE0465-MS1)					Source: 22E0245-16 Prepared: 20-May-2022 Analyzed: 10-Jun-2022 21:41						
Phenol	496	4.4	20.0	ug/kg	500	ND	99.1	34-120			
bis(2-chloroethyl) ether	539	19.3	50.0	ug/kg	500	ND	108	36-120			
2-Chlorophenol	514	13.9	20.0	ug/kg	500	ND	103	39-120			
1,3-Dichlorobenzene	453	3.1	20.0	ug/kg	500	ND	90.6	40-120			
1,4-Dichlorobenzene	538	3.1	20.0	ug/kg	500	ND	108	39-120			
1,2-Dichlorobenzene	469	2.4	20.0	ug/kg	500	ND	93.8	40-120			
Benzyl Alcohol	543	16.3	20.0	ug/kg	500	ND	108	19-120			
2,2'-Oxybis(1-chloropropane)	525	3.4	20.0	ug/kg	500	ND	105	32-120			
2-Methylphenol	466	6.7	20.0	ug/kg	500	ND	93.3	28-120			
Hexachloroethane	519	3.5	20.0	ug/kg	500	ND	104	38-120			
N-Nitroso-di-n-Propylamine	417	7.5	20.0	ug/kg	500	ND	83.4	34-120			
4-Methylphenol	492	7.4	20.0	ug/kg	500	ND	98.3	29-120			
Nitrobenzene	560	7.2	20.0	ug/kg	500	ND	112	36-120			
Isophorone	780	3.9	20.0	ug/kg	500	ND	156	37-120			*
2-Nitrophenol	542	4.9	20.0	ug/kg	500	ND	108	30-120			
2,4-Dimethylphenol	726	3.8	100	ug/kg	1300	ND	55.8	10-120			



Aspect Consulting, LLC.
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0465 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKE0465-MS1)											
		Source: 22E0245-16			Prepared: 20-May-2022		Analyzed: 10-Jun-2022 21:41				
Bis(2-Chloroethoxy)methane	524	4.3	20.0	ug/kg	500	ND	105	39-120			
2,4-Dichlorophenol	1400	15.3	100	ug/kg	1300	ND	108	28-120			
1,2,4-Trichlorobenzene	396	3.6	20.0	ug/kg	500	ND	79.3	35-120			
Naphthalene	472	4.2	20.0	ug/kg	500	ND	94.4	43-120			
Benzoic acid	2450	39.0	200	ug/kg	2300	ND	106	10-120			
4-Chloroaniline	512	8.4	100	ug/kg	1300	ND	39.3	11-120			
Hexachlorobutadiene	445	4.8	20.0	ug/kg	500	ND	89.0	37-120			
4-Chloro-3-Methylphenol	1660	12.4	100	ug/kg	1300	ND	127	32-120			*
2-Methylnaphthalene	515	4.5	20.0	ug/kg	500	ND	103	43-120			
Hexachlorocyclopentadiene	374	24.5	100	ug/kg	1300	ND	28.8	10-120			
2,4,6-Trichlorophenol	1500	9.0	100	ug/kg	1300	ND	115	44.6-132			
2,4,5-Trichlorophenol	1550	25.8	100	ug/kg	1300	ND	119	51.5-129			
2-Chloronaphthalene	492	8.0	20.0	ug/kg	500	ND	98.4	40-120			
2-Nitroaniline	1850	16.4	100	ug/kg	1300	ND	142	40-152			Q
Acenaphthylene	411	6.2	20.0	ug/kg	500	ND	82.2	42-120			
Dimethylphthalate	510	4.4	20.0	ug/kg	500	ND	102	43-120			
2,6-Dinitrotoluene	1490	20.5	100	ug/kg	1300	ND	114	31-156			
Acenaphthene	479	5.2	20.0	ug/kg	500	ND	95.8	45-120			
3-Nitroaniline	1040	22.3	100	ug/kg	1300	ND	80.1	22-120			
2,4-Dinitrophenol	2600	33.8	200	ug/kg	2300	ND	113	10-120			
Dibenzofuran	533	14.1	20.0	ug/kg	500	ND	107	43-120			
4-Nitrophenol	1500	32.6	100	ug/kg	1300	ND	115	15-138			
2,4-Dinitrotoluene	1400	16.2	100	ug/kg	1300	ND	108	44-150			
Fluorene	463	14.6	20.0	ug/kg	500	ND	92.6	45-120			
4-Chlorophenylphenyl ether	417	19.2	50.0	ug/kg	500	ND	83.4	36-141			
Diethyl phthalate	586	19.7	50.0	ug/kg	500	ND	117	50-120			
4-Nitroaniline	1160	29.4	100	ug/kg	1300	ND	89.4	24-168			
4,6-Dinitro-2-methylphenol	2990	38.0	200	ug/kg	2300	ND	130	33-144			
N-Nitrosodiphenylamine	556	5.3	20.0	ug/kg	500	ND	111	70-154			
4-Bromophenyl phenyl ether	544	17.0	20.0	ug/kg	500	ND	109	39-120			
Hexachlorobenzene	531	13.5	20.0	ug/kg	500	ND	106	33-120			
Pentachlorophenol	1260	31.3	100	ug/kg	1300	ND	97.3	16-120			Q
Phenanthrene	490	8.7	20.0	ug/kg	500	ND	98.1	49-120			
Anthracene	456	7.2	20.0	ug/kg	500	ND	91.3	45-120			
Carbazole	493	4.3	20.0	ug/kg	500	ND	98.7	43-135			



Aspect Consulting, LLC.
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0465 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKE0465-MS1)											
Source: 22E0245-16 Prepared: 20-May-2022 Analyzed: 10-Jun-2022 21:41											
Di-n-Butylphthalate	562	5.6	20.0	ug/kg	500	ND	112	48-126			
Fluoranthene	517	6.1	20.0	ug/kg	500	ND	103	53-145			
Pyrene	548	5.7	20.0	ug/kg	500	ND	110	52-134			
Butylbenzylphthalate	548	9.4	20.0	ug/kg	500	ND	109	45-132			
Benzo(a)anthracene	439	6.0	20.0	ug/kg	500	ND	87.9	49-120			
3,3'-Dichlorobenzidine	697	7.1	100	ug/kg	1300	ND	53.6	10-120			
Chrysene	460	6.1	20.0	ug/kg	500	ND	91.9	47-120			
bis(2-Ethylhexyl)phthalate	656	5.5	50.0	ug/kg	500	19.6	127	34-130			
Di-n-Octylphthalate	511	4.4	20.0	ug/kg	500	ND	102	28-124			
Benzo(a)fluoranthene, Total	870	10.0	40.0	ug/kg	1000	ND	87.0	30-160			
Benzo(a)pyrene	415	4.2	20.0	ug/kg	500	ND	83.0	42-120			
Indeno(1,2,3-cd)pyrene	356	14.7	20.0	ug/kg	500	ND	71.2	42-163			
Dibenzo(a,h)anthracene	387	17.2	20.0	ug/kg	500	ND	77.4	30-133			
Benzo(g,h,i)perylene	299	13.6	20.0	ug/kg	500	ND	59.9	46-148			
1-Methylnaphthalene	549	5.3	20.0	ug/kg	500	ND	110	42-120			
Surrogate: 2-Fluorophenol	736			ug/kg	750	543	98.1	27-120			
Surrogate: Phenol-d5	786			ug/kg	750	547	105	29-120			
Surrogate: 2-Chlorophenol-d4	772			ug/kg	750	735	103	31-120			
Surrogate: 1,2-Dichlorobenzene-d4	497			ug/kg	500	473	99.5	32-120			
Surrogate: Nitrobenzene-d5	598			ug/kg	500	516	120	30-120			
Surrogate: 2-Fluorobiphenyl	533			ug/kg	500	473	106	35-120			
Surrogate: 2,4,6-Tribromophenol	882			ug/kg	750	780	118	24-134			
Surrogate: p-Terphenyl-d14	523			ug/kg	500	496	105	37-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKE0465-MSD1)											
Source: 22E0245-16 Prepared: 20-May-2022 Analyzed: 10-Jun-2022 22:20											
Phenol	527	4.4	20.0	ug/kg	500	ND	105	34-120	6.06	30	
bis(2-chloroethyl) ether	586	19.3	50.0	ug/kg	500	ND	117	36-120	8.35	30	
2-Chlorophenol	614	13.9	20.0	ug/kg	500	ND	123	39-120	17.70	30	*
1,3-Dichlorobenzene	488	3.1	20.0	ug/kg	500	ND	97.6	40-120	7.44	30	
1,4-Dichlorobenzene	579	3.1	20.0	ug/kg	500	ND	116	39-120	7.28	30	
1,2-Dichlorobenzene	508	2.4	20.0	ug/kg	500	ND	102	40-120	8.03	30	
Benzyl Alcohol	587	16.3	20.0	ug/kg	500	ND	117	19-120	7.92	30	
2,2'-Oxybis(1-chloropropane)	565	3.4	20.0	ug/kg	500	ND	113	32-120	7.25	30	



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0465 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKE0465-MSD1)											
Source: 22E0245-16			Prepared: 20-May-2022			Analyzed: 10-Jun-2022 22:20					
2-Methylphenol	499	6.7	20.0	ug/kg	500	ND	99.8	28-120	6.77	30	
Hexachloroethane	579	3.5	20.0	ug/kg	500	ND	116	38-120	11.00	30	
N-Nitroso-di-n-Propylamine	431	7.5	20.0	ug/kg	500	ND	86.2	34-120	3.37	30	
4-Methylphenol	525	7.4	20.0	ug/kg	500	ND	105	29-120	6.63	30	
Nitrobenzene	601	7.2	20.0	ug/kg	500	ND	120	36-120	6.95	30	
Isophorone	836	3.9	20.0	ug/kg	500	ND	167	37-120	6.94	30	*
2-Nitrophenol	585	4.9	20.0	ug/kg	500	ND	117	30-120	7.50	30	
2,4-Dimethylphenol	848	3.8	100	ug/kg	1300	ND	65.2	10-120	15.50	30	
Bis(2-Chloroethoxy)methane	556	4.3	20.0	ug/kg	500	ND	111	39-120	6.02	30	
2,4-Dichlorophenol	1470	15.3	100	ug/kg	1300	ND	113	28-120	4.73	30	
1,2,4-Trichlorobenzene	426	3.6	20.0	ug/kg	500	ND	85.3	35-120	7.30	30	
Naphthalene	508	4.2	20.0	ug/kg	500	ND	102	43-120	7.39	30	
Benzoic acid	2390	39.0	200	ug/kg	2300	ND	104	10-120	2.43	30	
4-Chloroaniline	579	8.4	100	ug/kg	1300	ND	44.5	11-120	12.30	30	
Hexachlorobutadiene	470	4.8	20.0	ug/kg	500	ND	94.0	37-120	5.46	30	
4-Chloro-3-Methylphenol	1650	12.4	100	ug/kg	1300	ND	127	32-120	0.44	30	*
2-Methylnaphthalene	542	4.5	20.0	ug/kg	500	ND	108	43-120	5.09	30	
Hexachlorocyclopentadiene	410	24.5	100	ug/kg	1300	ND	31.5	10-120	9.15	30	
2,4,6-Trichlorophenol	1500	9.0	100	ug/kg	1300	ND	115	44.6-132	0.01	30	
2,4,5-Trichlorophenol	1530	25.8	100	ug/kg	1300	ND	118	51.5-129	1.46	30	
2-Chloronaphthalene	508	8.0	20.0	ug/kg	500	ND	102	40-120	3.18	30	
2-Nitroaniline	1820	16.4	100	ug/kg	1300	ND	140	40-152	1.36	30	Q
Acenaphthylene	421	6.2	20.0	ug/kg	500	ND	84.2	42-120	2.35	30	
Dimethylphthalate	504	4.4	20.0	ug/kg	500	ND	101	43-120	1.20	30	
2,6-Dinitrotoluene	1450	20.5	100	ug/kg	1300	ND	111	31-156	2.77	30	
Acenaphthene	494	5.2	20.0	ug/kg	500	ND	98.7	45-120	2.99	30	
3-Nitroaniline	1020	22.3	100	ug/kg	1300	ND	78.2	22-120	2.38	30	
2,4-Dinitrophenol	2490	33.8	200	ug/kg	2300	ND	108	10-120	4.38	30	
Dibenzofuran	541	14.1	20.0	ug/kg	500	ND	108	43-120	1.39	30	
4-Nitrophenol	1520	32.6	100	ug/kg	1300	ND	117	15-138	1.81	30	
2,4-Dinitrotoluene	1380	16.2	100	ug/kg	1300	ND	106	44-150	1.82	30	
Fluorene	468	14.6	20.0	ug/kg	500	ND	93.7	45-120	1.18	30	
4-Chlorophenylphenyl ether	423	19.2	50.0	ug/kg	500	ND	84.6	36-141	1.36	30	
Diethyl phthalate	576	19.7	50.0	ug/kg	500	ND	115	50-120	1.69	30	
4-Nitroaniline	1140	29.4	100	ug/kg	1300	ND	87.3	24-168	2.33	30	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0465 - EPA 3546 (Microwave)

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Detection Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKE0465-MSD1)											
Source: 22E0245-16			Prepared: 20-May-2022			Analyzed: 10-Jun-2022 22:20					
4,6-Dinitro-2-methylphenol	2970	38.0	200	ug/kg	2300	ND	129	33-144	0.49	30	
N-Nitrosodiphenylamine	549	5.3	20.0	ug/kg	500	ND	110	70-154	1.25	30	
4-Bromophenyl phenyl ether	535	17.0	20.0	ug/kg	500	ND	107	39-120	1.67	30	
Hexachlorobenzene	537	13.5	20.0	ug/kg	500	ND	107	33-120	1.22	30	
Pentachlorophenol	1180	31.3	100	ug/kg	1300	ND	90.8	16-120	6.88	30	Q
Phenanthrene	478	8.7	20.0	ug/kg	500	ND	95.7	49-120	2.48	30	
Anthracene	454	7.2	20.0	ug/kg	500	ND	90.9	45-120	0.43	30	
Carbazole	484	4.3	20.0	ug/kg	500	ND	96.8	43-135	1.87	30	
Di-n-Butylphthalate	551	5.6	20.0	ug/kg	500	ND	110	48-126	1.89	30	
Fluoranthene	502	6.1	20.0	ug/kg	500	ND	100	53-145	2.90	30	
Pyrene	536	5.7	20.0	ug/kg	500	ND	107	52-134	2.32	30	
Butylbenzylphthalate	538	9.4	20.0	ug/kg	500	ND	107	45-132	1.84	30	
Benzo(a)anthracene	431	6.0	20.0	ug/kg	500	ND	86.2	49-120	1.91	30	
3,3'-Dichlorobenzidine	757	7.1	100	ug/kg	1300	ND	58.2	10-120	8.24	30	
Chrysene	456	6.1	20.0	ug/kg	500	ND	91.1	47-120	0.82	30	
bis(2-Ethylhexyl)phthalate	635	5.5	50.0	ug/kg	500	19.6	123	34-130	3.33	30	
Di-n-Octylphthalate	494	4.4	20.0	ug/kg	500	ND	98.8	28-124	3.31	30	
Benzo(a)fluoranthene, Total	876	10.0	40.0	ug/kg	1000	ND	87.5	30-160	0.61	30	
Benzo(a)pyrene	416	4.2	20.0	ug/kg	500	ND	83.2	42-120	0.30	30	
Indeno(1,2,3-cd)pyrene	356	14.7	20.0	ug/kg	500	ND	71.1	42-163	0.11	30	
Dibenzo(a,h)anthracene	386	17.2	20.0	ug/kg	500	ND	77.1	30-133	0.39	30	
Benzo(g,h,i)perylene	303	13.6	20.0	ug/kg	500	ND	60.7	46-148	1.31	30	
1-Methylnaphthalene	581	5.3	20.0	ug/kg	500	ND	116	42-120	5.64	30	
Surrogate: 2-Fluorophenol	753			ug/kg	750	543	100	27-120			
Surrogate: Phenol-d5	799			ug/kg	750	547	107	29-120			
Surrogate: 2-Chlorophenol-d4	777			ug/kg	750	735	104	31-120			
Surrogate: 1,2-Dichlorobenzene-d4	497			ug/kg	500	473	99.4	32-120			
Surrogate: Nitrobenzene-d5	596			ug/kg	500	516	119	30-120			
Surrogate: 2-Fluorobiphenyl	515			ug/kg	500	473	103	35-120			
Surrogate: 2,4,6-Tribromophenol	826			ug/kg	750	780	110	24-134			
Surrogate: p-Terphenyl-d14	481			ug/kg	500	496	96.1	37-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKE0466 - EPA 3546 (Microwave) Low Level

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0466-BLK1)											
						Prepared: 23-May-2022	Analyzed: 03-Jun-2022 15:23				
Naphthalene	ND	0.44	0.60	ug/kg							U
1-Methylnaphthalene	ND	0.11	0.50	ug/kg							U
2-Methylnaphthalene	ND	0.13	0.50	ug/kg							U
Acenaphthylene	0.07	0.06	0.50	ug/kg							J
Acenaphthene	ND	0.09	0.50	ug/kg							U
Dibenzofuran	ND	0.13	0.50	ug/kg							U
Fluorene	0.10	0.07	0.50	ug/kg							J
Phenanthrene	ND	0.11	0.50	ug/kg							U
Anthracene	ND	0.07	0.50	ug/kg							U
Fluoranthene	0.08	0.08	0.50	ug/kg							J
Pyrene	0.10	0.09	0.50	ug/kg							J
Benzo(a)anthracene	ND	0.07	0.50	ug/kg							U
Chrysene	ND	0.07	0.50	ug/kg							U
Benzo(b)fluoranthene	ND	0.07	0.50	ug/kg							U
Benzo(k)fluoranthene	ND	0.10	0.50	ug/kg							U
Benzo(j)fluoranthene	ND	0.10	0.50	ug/kg							U
Benzo(a)pyrene	ND	0.09	0.50	ug/kg							U
Indeno(1,2,3-cd)pyrene	ND	0.09	0.50	ug/kg							U
Dibenzo(a,h)anthracene	ND	0.11	0.50	ug/kg							U
Benzo(g,h,i)perylene	ND	0.09	0.50	ug/kg							U
<i>Surrogate: 2-Methylnaphthalene-d10</i>	7.11			ug/kg	15.0		47.4	30-160			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	15.4			ug/kg	15.0		102	30-160			Q
<i>Surrogate: Fluoranthene-d10</i>	12.1			ug/kg	15.0		80.6	30-160			

LCS (BKE0466-BS1)											
						Prepared: 23-May-2022	Analyzed: 03-Jun-2022 15:55				
Naphthalene	8.15	0.44	0.60	ug/kg	15.0		54.3	30-160			
1-Methylnaphthalene	8.15	0.11	0.50	ug/kg	15.0		54.3	30-160			
2-Methylnaphthalene	8.15	0.13	0.50	ug/kg	15.0		54.3	30-160			
Acenaphthylene	7.70	0.06	0.50	ug/kg	15.0		51.4	30-160			
Acenaphthene	8.46	0.09	0.50	ug/kg	15.0		56.4	30-160			
Dibenzofuran	9.30	0.13	0.50	ug/kg	15.0		62.0	30-160			
Fluorene	9.66	0.07	0.50	ug/kg	15.0		64.4	30-160			
Phenanthrene	9.90	0.11	0.50	ug/kg	15.0		66.0	30-160			
Anthracene	3.71	0.07	0.50	ug/kg	15.0		24.7	30-160			*
Fluoranthene	11.7	0.08	0.50	ug/kg	15.0		78.2	30-160			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKE0466 - EPA 3546 (Microwave) Low Level

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Prepared: 23-May-2022 Analyzed: 03-Jun-2022 15:55											
Pyrene	11.5	0.09	0.50	ug/kg	15.0		76.9	30-160			
Benzo(a)anthracene	10.5	0.07	0.50	ug/kg	15.0		70.3	30-160			
Chrysene	11.9	0.07	0.50	ug/kg	15.0		79.6	30-160			
Benzo(b)fluoranthene	11.5	0.07	0.50	ug/kg	15.0		76.4	30-160			
Benzo(k)fluoranthene	13.2	0.10	0.50	ug/kg	15.0		87.9	30-160			
Benzo(j)fluoranthene	11.9	0.10	0.50	ug/kg	15.0		79.2	30-160			
Benzo(a)pyrene	3.07	0.09	0.50	ug/kg	15.0		20.5	30-160			*
Indeno(1,2,3-cd)pyrene	12.5	0.09	0.50	ug/kg	15.0		83.0	30-160			
Dibenzo(a,h)anthracene	12.3	0.11	0.50	ug/kg	15.0		81.8	30-160			
Benzo(g,h,i)perylene	12.0	0.09	0.50	ug/kg	15.0		80.0	30-160			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	8.32			ug/kg	15.0		55.5	30-160			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	15.0			ug/kg	15.0		100	30-160			Q
<i>Surrogate: Fluoranthene-d10</i>	12.0			ug/kg	15.0		80.3	30-160			

Prepared: 23-May-2022 Analyzed: 03-Jun-2022 16:27											
Naphthalene	8.85	0.44	0.60	ug/kg	15.0		59.0	30-160	8.26	30	
1-Methylnaphthalene	8.88	0.11	0.50	ug/kg	15.0		59.2	30-160	8.54	30	
2-Methylnaphthalene	8.76	0.13	0.50	ug/kg	15.0		58.4	30-160	7.28	30	
Acenaphthylene	8.41	0.06	0.50	ug/kg	15.0		56.1	30-160	8.81	30	
Acenaphthene	8.82	0.09	0.50	ug/kg	15.0		58.8	30-160	4.19	30	
Dibenzofuran	9.60	0.13	0.50	ug/kg	15.0		64.0	30-160	3.15	30	
Fluorene	9.82	0.07	0.50	ug/kg	15.0		65.5	30-160	1.72	30	
Phenanthrene	9.95	0.11	0.50	ug/kg	15.0		66.3	30-160	0.45	30	
Anthracene	5.62	0.07	0.50	ug/kg	15.0		37.5	30-160	41.00	30	*
Fluoranthene	11.7	0.08	0.50	ug/kg	15.0		78.1	30-160	0.10	30	
Pyrene	11.6	0.09	0.50	ug/kg	15.0		77.2	30-160	0.43	30	
Benzo(a)anthracene	11.2	0.07	0.50	ug/kg	15.0		74.5	30-160	5.77	30	
Chrysene	11.8	0.07	0.50	ug/kg	15.0		78.8	30-160	0.97	30	
Benzo(b)fluoranthene	11.3	0.07	0.50	ug/kg	15.0		75.7	30-160	0.98	30	
Benzo(k)fluoranthene	13.3	0.10	0.50	ug/kg	15.0		88.5	30-160	0.67	30	
Benzo(j)fluoranthene	12.0	0.10	0.50	ug/kg	15.0		80.3	30-160	1.46	30	
Benzo(a)pyrene	5.05	0.09	0.50	ug/kg	15.0		33.7	30-160	48.80	30	*
Indeno(1,2,3-cd)pyrene	12.4	0.09	0.50	ug/kg	15.0		82.7	30-160	0.41	30	
Dibenzo(a,h)anthracene	12.2	0.11	0.50	ug/kg	15.0		81.4	30-160	0.52	30	
Benzo(g,h,i)perylene	12.0	0.09	0.50	ug/kg	15.0		79.9	30-160	0.08	30	



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKE0466 - EPA 3546 (Microwave) Low Level

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKE0466-BSD1)						Prepared: 23-May-2022 Analyzed: 03-Jun-2022 16:27					
Surrogate: 2-Methylnaphthalene-d10	8.63			ug/kg	15.0		57.5	30-160			
Surrogate: Dibenzo[a,h]anthracene-d14	14.3			ug/kg	15.0		95.4	30-160			Q
Surrogate: Fluoranthene-d10	11.7			ug/kg	15.0		78.0	30-160			

Matrix Spike (BKE0466-MS1)			Source: 22E0245-07			Prepared: 23-May-2022 Analyzed: 03-Jun-2022 20:46					
Naphthalene	8.95	0.44	0.60	ug/kg	15.0	ND	59.7	30-160			
1-Methylnaphthalene	9.23	0.11	0.50	ug/kg	15.0	0.17	60.5	30-160			
2-Methylnaphthalene	9.21	0.13	0.50	ug/kg	15.0	0.22	60.0	30-160			
Acenaphthylene	9.59	0.06	0.50	ug/kg	15.0	0.10	63.3	30-160			
Acenaphthene	9.59	0.09	0.50	ug/kg	15.0	0.12	63.1	30-160			
Dibenzofuran	10.2	0.13	0.50	ug/kg	15.0	0.15	67.2	30-160			
Fluorene	10.8	0.07	0.50	ug/kg	15.0	0.12	71.0	30-160			
Phenanthrene	11.4	0.11	0.50	ug/kg	15.0	0.39	73.4	30-160			
Anthracene	7.09	0.07	0.50	ug/kg	15.0	ND	47.3	30-160			
Fluoranthene	13.2	0.08	0.50	ug/kg	15.0	0.23	86.7	30-160			
Pyrene	13.5	0.09	0.50	ug/kg	15.0	0.26	88.6	30-160			
Benzo(a)anthracene	12.6	0.07	0.50	ug/kg	15.0	0.10	83.1	30-160			
Chrysene	12.6	0.07	0.50	ug/kg	15.0	0.26	82.3	30-160			
Benzo(b)fluoranthene	12.4	0.07	0.50	ug/kg	15.0	0.17	81.7	30-160			
Benzo(k)fluoranthene	13.7	0.10	0.50	ug/kg	15.0	ND	91.0	30-160			
Benzo(j)fluoranthene	11.8	0.10	0.50	ug/kg	15.0	ND	78.4	30-160			
Benzo(a)pyrene	6.82	0.09	0.50	ug/kg	15.0	0.10	44.8	30-160			
Indeno(1,2,3-cd)pyrene	14.2	0.09	0.50	ug/kg	15.0	ND	95.0	30-160			
Dibenzo(a,h)anthracene	14.2	0.10	0.50	ug/kg	15.0	ND	94.8	30-160			
Benzo(g,h,i)perylene	13.5	0.08	0.50	ug/kg	15.0	0.14	89.0	30-160			
Surrogate: 2-Methylnaphthalene-d10	8.91			ug/kg	15.0	7.66	59.4	30-160			
Surrogate: Dibenzo[a,h]anthracene-d14	16.5			ug/kg	15.0	17.0	110	30-160			Q
Surrogate: Fluoranthene-d10	12.8			ug/kg	15.0	12.7	85.1	30-160			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKE0466-MSD1)			Source: 22E0245-07			Prepared: 23-May-2022 Analyzed: 03-Jun-2022 21:18					
Naphthalene	9.55	0.44	0.60	ug/kg	15.0	ND	63.7	30-160	6.46	30	
1-Methylnaphthalene	9.70	0.11	0.50	ug/kg	15.0	0.17	63.6	30-160	4.91	30	
2-Methylnaphthalene	9.83	0.13	0.50	ug/kg	15.0	0.22	64.1	30-160	6.46	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKE0466 - EPA 3546 (Microwave) Low Level

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKE0466-MSD1)											
		Source: 22E0245-07			Prepared: 23-May-2022		Analyzed: 03-Jun-2022 21:18				
Acenaphthylene	9.84	0.06	0.50	ug/kg	15.0	0.10	65.0	30-160	2.48	30	
Acenaphthene	9.87	0.09	0.50	ug/kg	15.0	0.12	65.1	30-160	2.95	30	
Dibenzofuran	10.7	0.13	0.50	ug/kg	15.0	0.15	70.3	30-160	4.36	30	
Fluorene	11.0	0.07	0.50	ug/kg	15.0	0.12	72.7	30-160	2.12	30	
Phenanthrene	11.4	0.11	0.50	ug/kg	15.0	0.39	73.5	30-160	0.05	30	
Anthracene	8.40	0.07	0.50	ug/kg	15.0	ND	56.1	30-160	17.00	30	
Fluoranthene	13.2	0.08	0.50	ug/kg	15.0	0.23	86.7	30-160	0.03	30	
Pyrene	13.5	0.09	0.50	ug/kg	15.0	0.26	88.4	30-160	0.32	30	
Benzo(a)anthracene	13.0	0.07	0.50	ug/kg	15.0	0.10	85.8	30-160	3.07	30	
Chrysene	12.7	0.07	0.50	ug/kg	15.0	0.26	82.7	30-160	0.39	30	
Benzo(b)fluoranthene	12.6	0.07	0.50	ug/kg	15.0	0.17	82.8	30-160	1.33	30	
Benzo(k)fluoranthene	14.1	0.10	0.50	ug/kg	15.0	ND	94.1	30-160	3.17	30	
Benzo(j)fluoranthene	12.0	0.10	0.50	ug/kg	15.0	ND	80.1	30-160	2.14	30	
Benzo(a)pyrene	8.33	0.09	0.50	ug/kg	15.0	0.10	54.9	30-160	19.90	30	
Indeno(1,2,3-cd)pyrene	14.3	0.09	0.50	ug/kg	15.0	ND	95.5	30-160	0.47	30	
Dibenzo(a,h)anthracene	14.4	0.10	0.50	ug/kg	15.0	ND	95.9	30-160	1.11	30	
Benzo(g,h,i)perylene	13.4	0.08	0.50	ug/kg	15.0	0.14	88.8	30-160	0.31	30	
Surrogate: 2-Methylnaphthalene-d10	9.37			ug/kg	15.0	7.66	62.5	30-160			
Surrogate: Dibenzo[a,h]anthracene-d14	16.8			ug/kg	15.0	17.0	112	30-160			Q
Surrogate: Fluoranthene-d10	13.0			ug/kg	15.0	12.7	86.7	30-160			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BKE0386 - EPA 3546 (Microwave)

Instrument: FID4 Analyst: CTO

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0386-BLK1)		Prepared: 17-May-2022 Analyzed: 18-May-2022 16:23								
Diesel Range Organics (C12-C24)	ND	5.00	mg/kg							U
Motor Oil Range Organics (C24-C38)	ND	10.0	mg/kg							U
<i>Surrogate: o-Terphenyl</i>	11.4		mg/kg	11.3	102	88.8	50-150			
LCS (BKE0386-BS1)		Prepared: 17-May-2022 Analyzed: 18-May-2022 16:43								
Diesel Range Organics (C12-C24)	141	5.00	mg/kg	150	94.3	94.3	63-120			
<i>Surrogate: o-Terphenyl</i>	11.9		mg/kg	11.3	105	88.8	50-150			
LCS Dup (BKE0386-BSD1)		Prepared: 17-May-2022 Analyzed: 18-May-2022 17:03								
Diesel Range Organics (C12-C24)	149	5.00	mg/kg	150	99.2	99.2	63-120	5.08	30	
<i>Surrogate: o-Terphenyl</i>	12.1		mg/kg	11.3	107	88.8	50-150			
Matrix Spike (BKE0386-MS1)		Source: 22E0245-01		Prepared: 17-May-2022 Analyzed: 18-May-2022 17:23						
Diesel Range Organics (C12-C24)	182	7.13	mg/kg	214	ND	82.5	63-120			
<i>Surrogate: o-Terphenyl</i>	14.2		mg/kg	16.0	15.3	88.8	50-150			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKE0386-MSD1)		Source: 22E0245-01		Prepared: 17-May-2022 Analyzed: 18-May-2022 17:43						
Diesel Range Organics (C12-C24)	203	7.13	mg/kg	214	ND	92.2	63-120	10.80	30	
<i>Surrogate: o-Terphenyl</i>	16.2		mg/kg	16.0	15.3	101	50-150			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BKE0467 - EPA 3546 (Microwave)

Instrument: ECD7 Analyst: JGR

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0467-BLK1)											
						Prepared: 23-May-2022 Analyzed: 25-May-2022 16:35					
Aroclor 1016	ND	1.6	4.0	ug/kg							U
Aroclor 1221	ND	1.6	4.0	ug/kg							U
Aroclor 1232	ND	1.6	4.0	ug/kg							U
Aroclor 1242	ND	1.6	4.0	ug/kg							U
Aroclor 1248	ND	1.6	4.0	ug/kg							U
Aroclor 1254	ND	1.6	4.0	ug/kg							U
Aroclor 1260	ND	0.6	4.0	ug/kg							U
Aroclor 1262	ND	0.6	4.0	ug/kg							U
Aroclor 1268	ND	0.6	4.0	ug/kg							U
Surrogate: Decachlorobiphenyl	7.03			ug/kg	8.00		87.9	40-126			
Surrogate: Tetrachlorometaxyene	6.36			ug/kg	8.00		79.6	44-120			
Surrogate: Decachlorobiphenyl [2C]	8.36			ug/kg	8.00		104	40-126			
Surrogate: Tetrachlorometaxyene [2C]	6.07			ug/kg	8.00		75.9	44-120			
LCS (BKE0467-BS1)											
						Prepared: 23-May-2022 Analyzed: 25-May-2022 10:57					
Aroclor 1016 [2C]	75.6	1.6	4.0	ug/kg	101		75.0	56-120			
Aroclor 1260 [2C]	104	0.6	4.0	ug/kg	101		103	58-120			
Surrogate: Decachlorobiphenyl	6.97			ug/kg	8.00		87.2	40-126			
Surrogate: Tetrachlorometaxyene	6.20			ug/kg	8.00		77.5	44-120			
Surrogate: Decachlorobiphenyl [2C]	9.30			ug/kg	8.00		116	40-126			
Surrogate: Tetrachlorometaxyene [2C]	5.80			ug/kg	8.00		72.5	44-120			
LCS Dup (BKE0467-BS1)											
						Prepared: 23-May-2022 Analyzed: 25-May-2022 11:18					
Aroclor 1016 [2C]	79.5	1.6	4.0	ug/kg	101		78.9	56-120	5.04	30	
Aroclor 1260 [2C]	108	0.6	4.0	ug/kg	101		107	58-120	3.77	30	
Surrogate: Decachlorobiphenyl	6.59			ug/kg	8.00		82.4	40-126			
Surrogate: Tetrachlorometaxyene	6.27			ug/kg	8.00		78.4	44-120			
Surrogate: Decachlorobiphenyl [2C]	8.89			ug/kg	8.00		111	40-126			
Surrogate: Tetrachlorometaxyene [2C]	5.88			ug/kg	8.00		73.5	44-120			
Matrix Spike (BKE0467-MS1)											
			Source: 22E0245-10			Prepared: 23-May-2022 Analyzed: 25-May-2022 15:53					
Aroclor 1016	73.6	1.6	4.0	ug/kg	101	ND	72.9	56-120			
Aroclor 1260	80.0	0.6	4.0	ug/kg	101	4.2	75.2	58-120			
Surrogate: Decachlorobiphenyl	6.27			ug/kg	8.00		78.4	40-126			



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Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BKE0467 - EPA 3546 (Microwave)

Instrument: ECD7 Analyst: JGR

QC Sample/Analyte	Detection Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKE0467-MS1)		Source: 22E0245-10		Prepared: 23-May-2022		Analyzed: 25-May-2022 15:53				
Surrogate: Tetrachlorometaxylene	6.32		ug/kg	8.00		79.0	44-120			
Surrogate: Decachlorobiphenyl [2C]	6.68		ug/kg	8.00		83.5	40-126			
Surrogate: Tetrachlorometaxylene [2C]	5.81		ug/kg	8.00		72.6	44-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKE0467-MSD1)		Source: 22E0245-10		Prepared: 23-May-2022		Analyzed: 25-May-2022 16:14				
Aroclor 1016	73.6	1.6	4.0	ug/kg	101	ND	73.0	56-120	0.10	30
Aroclor 1260	100	0.6	4.0	ug/kg	101	4.2	95.2	58-120	22.40	30
Surrogate: Decachlorobiphenyl	6.52		ug/kg	8.00		81.5	40-126			
Surrogate: Tetrachlorometaxylene	6.64		ug/kg	8.00		82.9	44-120			
Surrogate: Decachlorobiphenyl [2C]	NRS		ug/kg	8.00		NRS	40-126			NRS
Surrogate: Tetrachlorometaxylene [2C]	6.25		ug/kg	8.00		78.1	44-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 15-Jun-2022 16:27
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKE0639 - SMM EPA 7471B

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0639-BLK1)						Prepared: 25-May-2022 Analyzed: 26-May-2022 14:26					
Mercury	ND	0.00525	0.0250	mg/kg							U
LCS (BKE0639-BS1)						Prepared: 25-May-2022 Analyzed: 26-May-2022 14:28					
Mercury	0.474	0.00525	0.0250	mg/kg	0.500		94.8	80-120			
Duplicate (BKE0639-DUP1)						Source: 22E0245-16 Prepared: 25-May-2022 Analyzed: 26-May-2022 14:33					
Mercury	ND	0.00607	0.0289	mg/kg		ND					U
Matrix Spike (BKE0639-MS1)						Source: 22E0245-16 Prepared: 25-May-2022 Analyzed: 26-May-2022 14:35					
Mercury	0.277	0.00607	0.0289	mg/kg	0.289	ND	95.7	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BKE0639-MSD1)						Source: 22E0245-16 Prepared: 25-May-2022 Analyzed: 26-May-2022 14:37					
Mercury	0.272	0.00601	0.0286	mg/kg	0.286	ND	95.1	75-125	1.61	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



Aspect Consulting, LLC.
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKE0677 - SWN EPA 3050B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0677-BLK1)												
						Prepared: 25-May-2022 Analyzed: 01-Jun-2022 20:42						
Antimony	121	ND	0.10	0.20	mg/kg							U
Antimony	123	ND	0.10	0.20	mg/kg							U
Beryllium	9	ND	0.02	0.20	mg/kg							U
Chromium	52	ND	0.26	0.50	mg/kg							U
Chromium	53	ND	0.24	0.50	mg/kg							U
Lead	208	ND	0.05	0.10	mg/kg							U
Silver	107	ND	0.02	0.20	mg/kg							U
Thallium	205	ND	0.02	0.20	mg/kg							U
Arsenic	75a	ND	0.04	0.20	mg/kg							U
Cadmium	111	ND	0.03	0.10	mg/kg							U
Cadmium	114	ND	0.04	0.10	mg/kg							U
Copper	63	ND	0.17	0.50	mg/kg							U
Copper	65	ND	0.35	0.50	mg/kg							U
Nickel	60	ND	0.08	0.50	mg/kg							U
Nickel	62	ND	0.22	0.50	mg/kg							U
Selenium	78	ND	0.18	0.50	mg/kg							U
Zinc	66	ND	2.9	6.0	mg/kg							U
Zinc	67	ND	0.9	6.0	mg/kg							U

LCS (BKE0677-BS1)

Prepared: 25-May-2022 Analyzed: 01-Jun-2022 20:47

Antimony	121	25.1	0.10	0.20	mg/kg	25.0		100	80-120			
Antimony	123	26.0	0.10	0.20	mg/kg	25.0		104	80-120			
Beryllium	9	24.8	0.02	0.20	mg/kg	25.0		99.2	80-120			
Chromium	52	25.3	0.26	0.50	mg/kg	25.0		101	80-120			
Chromium	53	26.1	0.24	0.50	mg/kg	25.0		104	80-120			
Lead	208	25.3	0.05	0.10	mg/kg	25.0		101	80-120			
Silver	107	27.4	0.02	0.20	mg/kg	25.0		110	80-120			
Thallium	205	28.3	0.02	0.20	mg/kg	25.0		113	80-120			
Arsenic	75a	25.5	0.04	0.20	mg/kg	25.0		102	80-120			
Cadmium	111	26.7	0.03	0.10	mg/kg	25.0		107	80-120			
Cadmium	114	26.7	0.04	0.10	mg/kg	25.0		107	80-120			
Copper	63	27.6	0.17	0.50	mg/kg	25.0		110	80-120			
Copper	65	27.6	0.35	0.50	mg/kg	25.0		110	80-120			
Nickel	60	26.6	0.08	0.50	mg/kg	25.0		106	80-120			
Nickel	62	26.6	0.22	0.50	mg/kg	25.0		107	80-120			



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKE0677 - SWN EPA 3050B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKE0677-BS1)						Prepared: 25-May-2022 Analyzed: 01-Jun-2022 20:47						
Selenium	78	79.4	0.18	0.50	mg/kg	80.0		99.2	80-120			
Zinc	66	84.5	2.9	6.0	mg/kg	80.0		106	80-120			
Zinc	67	80.2	0.9	6.0	mg/kg	80.0		100	80-120			

Duplicate (BKE0677-DUP1)						Source: 22E0245-16 Prepared: 25-May-2022 Analyzed: 01-Jun-2022 22:19						
Antimony	121	ND	0.12	0.24	mg/kg		ND					U
Beryllium	9	0.11	0.02	0.24	mg/kg		0.10			16.20	20	J
Chromium	52	8.85	0.31	0.60	mg/kg		9.85			10.80	20	
Lead	208	1.83	0.06	0.12	mg/kg		1.74			5.30	20	
Silver	107	0.04	0.03	0.24	mg/kg		0.03			14.40	20	J
Thallium	205	0.03	0.03	0.24	mg/kg		ND					J
Arsenic	75a	1.88	0.05	0.24	mg/kg		1.93			2.49	20	
Cadmium	111	ND	0.04	0.12	mg/kg		ND					U
Copper	63	10.4	0.21	0.60	mg/kg		9.65			7.45	20	
Nickel	60	6.73	0.10	0.60	mg/kg		6.56			2.66	20	
Selenium	78	0.47	0.22	0.60	mg/kg		0.47			0.41	20	J
Zinc	66	20.2	3.5	7.2	mg/kg		19.8			2.11	20	

Matrix Spike (BKE0677-MS1)						Source: 22E0245-16 Prepared: 25-May-2022 Analyzed: 01-Jun-2022 22:24						
Antimony	121	5.90	0.12	0.24	mg/kg	30.1	ND	19.6	75-125			*
Beryllium	9	31.1	0.02	0.24	mg/kg	30.1	0.10	103	75-125			
Chromium	52	39.6	0.31	0.60	mg/kg	30.1	9.85	98.9	75-125			
Lead	208	31.7	0.06	0.12	mg/kg	30.1	1.74	99.7	75-125			
Silver	107	32.6	0.03	0.24	mg/kg	30.1	0.03	108	75-125			
Thallium	205	33.4	0.03	0.24	mg/kg	30.1	ND	111	75-125			
Arsenic	75a	32.5	0.05	0.24	mg/kg	30.1	1.93	102	75-125			
Cadmium	111	33.1	0.04	0.12	mg/kg	30.1	ND	110	75-125			
Copper	63	43.5	0.21	0.60	mg/kg	30.1	9.65	113	75-125			
Nickel	60	39.6	0.10	0.60	mg/kg	30.1	6.56	110	75-125			
Selenium	78	94.7	0.22	0.60	mg/kg	96.2	0.47	97.9	75-125			
Zinc	66	122	3.5	7.2	mg/kg	96.2	19.8	107	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKE0677-MSD1)						Source: 22E0245-16 Prepared: 25-May-2022 Analyzed: 01-Jun-2022 22:29						
Antimony	121	5.33	0.12	0.24	mg/kg	30.2	ND	17.7	75-125	10.20	20	*



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
15-Jun-2022 16:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKE0677 - SWN EPA 3050B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKE0677-MSD1)		Source: 22E0245-16			Prepared: 25-May-2022		Analyzed: 01-Jun-2022 22:29					
Beryllium	9	30.0	0.02	0.24	mg/kg	30.2	0.10	99.2	75-125	3.65	20	
Chromium	52	38.5	0.31	0.60	mg/kg	30.2	9.85	95.0	75-125	2.80	20	
Lead	208	31.0	0.06	0.12	mg/kg	30.2	1.74	96.9	75-125	2.39	20	
Silver	107	31.9	0.03	0.24	mg/kg	30.2	0.03	106	75-125	2.14	20	
Thallium	205	32.6	0.03	0.24	mg/kg	30.2	ND	108	75-125	2.58	20	
Arsenic	75a	32.6	0.05	0.24	mg/kg	30.2	1.93	102	75-125	0.19	20	
Cadmium	111	32.8	0.04	0.12	mg/kg	30.2	ND	109	75-125	1.00	20	
Copper	63	43.8	0.21	0.60	mg/kg	30.2	9.65	113	75-125	0.62	20	
Nickel	60	39.0	0.10	0.60	mg/kg	30.2	6.56	108	75-125	1.40	20	
Selenium	78	95.4	0.22	0.60	mg/kg	96.5	0.47	98.3	75-125	0.70	20	
Zinc	66	121	3.5	7.2	mg/kg	96.5	19.8	105	75-125	0.87	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC.
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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

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Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Solid	
Silver-107	NELAP,DoD-ELAP,WADOE
Beryllium-9	NELAP,DoD-ELAP,WADOE
Chromium-52	NELAP,DoD-ELAP,WADOE,ADEC
Chromium-53	NELAP,DoD-ELAP,WADOE,ADEC
Lead-208	NELAP,DoD-ELAP,WADOE,ADEC
Antimony-121	NELAP,DoD-ELAP,WADOE
Antimony-123	NELAP,DoD-ELAP,WADOE
Thallium-205	NELAP,DoD-ELAP,WADOE
EPA 6020B UCT-KED in Solid	
Arsenic-75a	NELAP,DoD-ELAP,WADOE,ADEC
Cadmium-111	NELAP,DoD-ELAP,WADOE,ADEC
Cadmium-114	NELAP,DoD-ELAP,WADOE,ADEC
Copper-63	NELAP,DoD-ELAP,WADOE
Copper-65	NELAP,DoD-ELAP,WADOE
Nickel-60	NELAP,DoD-ELAP,WADOE,ADEC
Nickel-62	NELAP,DoD-ELAP,WADOE,ADEC
Selenium-78	NELAP,DoD-ELAP,WADOE
Zinc-66	NELAP,DoD-ELAP,WADOE
Zinc-67	NELAP,DoD-ELAP,WADOE
EPA 7471B in Solid	
Mercury	WADOE,NELAP,DoD-ELAP
EPA 8082A in Solid	
Aroclor 1016	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1016 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 [2C]	WADOE,DoD-ELAP,NELAP,ADEC



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Aroclor 1260	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 [2C]	WADOE,DoD-ELAP,NELAP,ADEC

EPA 8260D in Solid

Chloromethane	WADOE,DoD-ELAP,NELAP,ADEC
Vinyl Chloride	WADOE,DoD-ELAP,NELAP,ADEC
Bromomethane	WADOE,DoD-ELAP,NELAP,ADEC
Chloroethane	WADOE,DoD-ELAP,NELAP,ADEC
Trichlorofluoromethane	WADOE,DoD-ELAP,NELAP,ADEC
Acrolein	WADOE,DoD-ELAP,NELAP
1,1,2-Trichloro-1,2,2-Trifluoroethane	WADOE,DoD-ELAP,NELAP,ADEC
Acetone	WADOE,DoD-ELAP,NELAP
1,1-Dichloroethene	WADOE,DoD-ELAP,NELAP,ADEC
Iodomethane	WADOE,DoD-ELAP,NELAP,ADEC
Methylene Chloride	WADOE,DoD-ELAP,NELAP,ADEC
Acrylonitrile	WADOE,DoD-ELAP,NELAP
Carbon Disulfide	WADOE,DoD-ELAP,NELAP,ADEC
trans-1,2-Dichloroethene	WADOE,DoD-ELAP,NELAP,ADEC
Vinyl Acetate	WADOE,DoD-ELAP,NELAP
1,1-Dichloroethane	WADOE,DoD-ELAP,NELAP,ADEC
2-Butanone	WADOE,DoD-ELAP,NELAP
2,2-Dichloropropane	WADOE,DoD-ELAP,NELAP
cis-1,2-Dichloroethene	WADOE,DoD-ELAP,NELAP,ADEC
Chloroform	WADOE,DoD-ELAP,NELAP,ADEC
Bromochloromethane	WADOE,DoD-ELAP,NELAP,ADEC
1,1,1-Trichloroethane	WADOE,DoD-ELAP,NELAP,ADEC
1,1-Dichloropropene	WADOE,DoD-ELAP,NELAP,ADEC
Carbon tetrachloride	WADOE,DoD-ELAP,NELAP,ADEC
1,2-Dichloroethane	WADOE,DoD-ELAP,NELAP,ADEC
Benzene	WADOE,DoD-ELAP,NELAP,ADEC
Trichloroethene	WADOE,DoD-ELAP,NELAP,ADEC
1,2-Dichloropropane	WADOE,DoD-ELAP,NELAP,ADEC
Bromodichloromethane	WADOE,DoD-ELAP,NELAP,ADEC
Dibromomethane	WADOE,DoD-ELAP,NELAP,ADEC
2-Chloroethyl vinyl ether	WADOE,DoD-ELAP,NELAP
4-Methyl-2-Pentanone	WADOE,DoD-ELAP,NELAP



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cis-1,3-Dichloropropene	WADOE,DoD-ELAP,NELAP,ADEC
Toluene	WADOE,DoD-ELAP,NELAP,ADEC
trans-1,3-Dichloropropene	WADOE,DoD-ELAP,NELAP,ADEC
2-Hexanone	WADOE,DoD-ELAP,NELAP
1,1,2-Trichloroethane	WADOE,DoD-ELAP,NELAP,ADEC
1,3-Dichloropropane	WADOE,DoD-ELAP,NELAP,ADEC
Tetrachloroethene	WADOE,DoD-ELAP,NELAP,ADEC
Dibromochloromethane	WADOE,DoD-ELAP,NELAP,ADEC
1,2-Dibromoethane	WADOE,DoD-ELAP,NELAP,ADEC
Chlorobenzene	WADOE,DoD-ELAP,NELAP,ADEC
Ethylbenzene	WADOE,DoD-ELAP,NELAP,ADEC
1,1,1,2-Tetrachloroethane	WADOE,DoD-ELAP,NELAP,ADEC
m,p-Xylene	WADOE,DoD-ELAP,NELAP,ADEC
o-Xylene	WADOE,DoD-ELAP,NELAP,ADEC
Xylenes, total	WADOE
Styrene	WADOE,DoD-ELAP,NELAP,ADEC
Bromoform	WADOE,DoD-ELAP,NELAP,ADEC
1,1,1,2-Tetrachloroethane	WADOE,DoD-ELAP,NELAP,ADEC
1,2,3-Trichloropropane	WADOE,DoD-ELAP,NELAP,ADEC
trans-1,4-Dichloro 2-Butene	WADOE,DoD-ELAP,NELAP
n-Propylbenzene	WADOE,DoD-ELAP,NELAP
Bromobenzene	WADOE,DoD-ELAP,NELAP,ADEC
Isopropyl Benzene	WADOE,DoD-ELAP,NELAP,ADEC
2-Chlorotoluene	WADOE,DoD-ELAP,NELAP
4-Chlorotoluene	WADOE,DoD-ELAP,NELAP
t-Butylbenzene	WADOE,DoD-ELAP,NELAP
1,3,5-Trimethylbenzene	WADOE,DoD-ELAP,NELAP
1,2,4-Trimethylbenzene	WADOE,DoD-ELAP,NELAP
s-Butylbenzene	WADOE,DoD-ELAP,NELAP
4-Isopropyl Toluene	WADOE,DoD-ELAP,NELAP
1,3-Dichlorobenzene	WADOE,DoD-ELAP,NELAP
1,4-Dichlorobenzene	WADOE,DoD-ELAP,NELAP
n-Butylbenzene	WADOE,DoD-ELAP,NELAP
1,2-Dichlorobenzene	WADOE,DoD-ELAP,NELAP
1,2-Dibromo-3-chloropropane	WADOE,DoD-ELAP,NELAP,ADEC
1,2,4-Trichlorobenzene	WADOE,DoD-ELAP,NELAP,ADEC
Hexachloro-1,3-Butadiene	WADOE,DoD-ELAP,NELAP,ADEC
Naphthalene	WADOE,DoD-ELAP,NELAP
1,2,3-Trichlorobenzene	WADOE,DoD-ELAP,NELAP,ADEC



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Dichlorodifluoromethane	WADOE,DoD-ELAP,NELAP,ADEC
Methyl tert-butyl Ether	WADOE,DoD-ELAP,NELAP
n-Hexane	WADOE
2-Pentanone	WADOE
Dibromofluoromethane	WADOE
4-Bromofluorobenzene	WADOE

EPA 8270E in Solid

Phenol	DoD-ELAP,NELAP,WADOE
bis(2-chloroethyl) ether	DoD-ELAP,NELAP,WADOE
2-Chlorophenol	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,NELAP,WADOE
Benzyl Alcohol	DoD-ELAP,NELAP,WADOE
2,2'-Oxybis(1-chloropropane)	DoD-ELAP,NELAP
2-Methylphenol	DoD-ELAP,NELAP,WADOE
Hexachloroethane	DoD-ELAP,NELAP,WADOE
N-Nitroso-di-n-Propylamine	DoD-ELAP,NELAP,WADOE
4-Methylphenol	DoD-ELAP,NELAP,WADOE
Nitrobenzene	DoD-ELAP,NELAP,WADOE
Isophorone	DoD-ELAP,NELAP,WADOE
2-Nitrophenol	DoD-ELAP,NELAP,WADOE
2,4-Dimethylphenol	DoD-ELAP,NELAP,WADOE
Bis(2-Chloroethoxy)methane	DoD-ELAP,NELAP,WADOE
2,4-Dichlorophenol	DoD-ELAP,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,NELAP,WADOE
Naphthalene	DoD-ELAP,NELAP,WADOE,ADEC
Benzoic acid	DoD-ELAP,NELAP,WADOE
4-Chloroaniline	DoD-ELAP,NELAP,WADOE
Hexachlorobutadiene	DoD-ELAP,NELAP,WADOE
4-Chloro-3-Methylphenol	DoD-ELAP,NELAP,WADOE
2-Methylnaphthalene	DoD-ELAP,NELAP,WADOE,ADEC
Hexachlorocyclopentadiene	DoD-ELAP,NELAP,WADOE
2,4,6-Trichlorophenol	DoD-ELAP,NELAP,WADOE
2,4,5-Trichlorophenol	DoD-ELAP,NELAP,WADOE
2-Chloronaphthalene	DoD-ELAP,NELAP,WADOE
2-Nitroaniline	DoD-ELAP,NELAP,WADOE
Acenaphthylene	DoD-ELAP,NELAP,WADOE,ADEC
Dimethylphthalate	DoD-ELAP,NELAP,WADOE



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2,6-Dinitrotoluene	DoD-ELAP,NELAP,WADOE
Acenaphthene	DoD-ELAP,NELAP,WADOE,ADEC
3-Nitroaniline	DoD-ELAP,NELAP,WADOE
2,4-Dinitrophenol	DoD-ELAP,NELAP,WADOE
Dibenzofuran	DoD-ELAP,NELAP,WADOE,ADEC
4-Nitrophenol	DoD-ELAP,NELAP,WADOE
2,4-Dinitrotoluene	DoD-ELAP,NELAP,WADOE
Fluorene	DoD-ELAP,NELAP,WADOE,ADEC
4-Chlorophenylphenyl ether	DoD-ELAP,NELAP
Diethyl phthalate	DoD-ELAP,NELAP,WADOE
4-Nitroaniline	DoD-ELAP,NELAP,WADOE
4,6-Dinitro-2-methylphenol	DoD-ELAP,NELAP,WADOE
N-Nitrosodiphenylamine	DoD-ELAP,NELAP,WADOE
4-Bromophenyl phenyl ether	DoD-ELAP,NELAP,WADOE
Hexachlorobenzene	DoD-ELAP,NELAP,WADOE
Pentachlorophenol	DoD-ELAP,NELAP,WADOE
Phenanthrene	DoD-ELAP,NELAP,WADOE,ADEC
Anthracene	DoD-ELAP,NELAP,WADOE,ADEC
Carbazole	DoD-ELAP,NELAP,WADOE,ADEC
Di-n-Butylphthalate	DoD-ELAP,NELAP,WADOE
Fluoranthene	DoD-ELAP,NELAP,WADOE,ADEC
Pyrene	DoD-ELAP,NELAP,WADOE,ADEC
Butylbenzylphthalate	DoD-ELAP,NELAP,WADOE
Benzo(a)anthracene	DoD-ELAP,NELAP,WADOE,ADEC
3,3'-Dichlorobenzidine	DoD-ELAP,NELAP,WADOE
Chrysene	DoD-ELAP,NELAP,WADOE,ADEC
bis(2-Ethylhexyl)phthalate	DoD-ELAP,NELAP,WADOE
Di-n-Octylphthalate	DoD-ELAP,NELAP,WADOE
Benzo(b)fluoranthene	DoD-ELAP,NELAP,WADOE,ADEC
Benzo(k)fluoranthene	DoD-ELAP,NELAP,WADOE,ADEC
Benzo(a)fluoranthenes, Total	WADOE,ADEC
Benzo(a)pyrene	DoD-ELAP,NELAP,WADOE,ADEC
Indeno(1,2,3-cd)pyrene	DoD-ELAP,NELAP,WADOE,ADEC
Dibenzo(a,h)anthracene	DoD-ELAP,NELAP,WADOE,ADEC
Benzo(g,h,i)perylene	DoD-ELAP,NELAP,WADOE,ADEC
N-Nitrosodimethylamine	DoD-ELAP,NELAP,WADOE
Aniline	DoD-ELAP,NELAP,WADOE
Retene	DoD-ELAP,NELAP,WADOE
Pyridine	DoD-ELAP,NELAP,WADOE



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1-Methylnaphthalene	DoD-ELAP,NELAP,WADOE,ADEC
Azobenzene (1,2-DP-Hydrazine)	NELAP,WADOE
2,3,4,6-Tetrachlorophenol	DoD-ELAP,WADOE
Benzidine	DoD-ELAP,NELAP
Tetrachloroguaiacol	DoD-ELAP,WADOE
3,4,5-Trichloroguaiacol	WADOE
3,4,6-Trichloroguaiacol	WADOE
4,5,6-Trichloroguaiacol	WADOE
Guaiacol	WADOE

NWTPH-Dx in Solid

Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

NWTPHg in Solid

Gasoline Range Organics (Tol-Nap)	DoD-ELAP
Gasoline Range Organics (2MP-TMB)	DoD-ELAP
Gasoline Range Organics (Tol-C12)	DoD-ELAP
Gasoline Range Organics (C6-C10)	DoD-ELAP
Gasoline Range Organics (C5-C12)	DoD-ELAP
4-Bromofluorobenzene (field spiked)	DoD-ELAP



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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022



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Notes and Definitions

- * Flagged value is not within established control limits.
- D The reported value is from a dilution
- D1 Surrogate was not detected due to sample extract dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- J Estimated concentration value detected below the reporting limit.
- M Estimated value for a GC/MS analyte detected and confirmed by an analyst but with low spectral match parameters.
- NRS This surrogate not reported due to chromatographic interference
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- Y1 Raised reporting limit due to interference
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants

22 June 2022

Zanna Satterwhite
Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle, WA 98104

RE: West Duwamish CSO (150218)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
22E0401

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Shelly Fishel, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, LLC
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number: 22E0401	Turn-around Requested: Standard	Page: 1 of 1
ARI Client Company: Aspect Consulting	Phone:	Date: 5/25/22
Client Contact: Zanna Satterwhite		Ice Present? Y
Client Project Name: West Duwamish CSO		No. of Coolers: 7
Client Project #: 150218	Samplers: Ashley Provan	Cooler Temps:

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested								Notes/Comments
					NH ₄ P GAX	NH ₄ P DX	Metals EPA 200.7 100.8/100.2A	Dissolved Metals	SVOC EPA 8160D	SEM-PAH-LL a2 TOD	PUB-LL HOLD- EPA 8082	SVOC EPA 8210	
MW-5-220523	5/23/22	1045	W	15	X	X	X	X	X	X	HOLD	X	*mercury EPA 7470/246.1
MW-2-220523	↓	1255		15									MS/MSD vol
MW-1-220523	↓	1515		15									MS/MSD vol
MW-3-220524	5/24/22	0905		15									
MW-x-220522		1100											
MW-4-220524		1055											
MW-6-220524		1420											
MW-7-220524		1315											
MW-8-220524	↓	1020											
Trip blanks	5/23/22			6	X	NO	NO	NO	X	NO	NO	X	only for vols
Comments/Special Instructions Metals - Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, selenium, silver, thallium, zinc, nickel at least one broken vial, spill is in baggy - accounting analyzed on that label	Relinquished by: (Signature) <i>Ashley Provan</i> Printed Name: Ashley Provan Company: Aspect Consulting Date & Time: 5/25/22 1034	Received by: (Signature) <i>DANNIROS</i> Printed Name: DANNIROS Company: ARLL Date & Time: 05/25/22 1034	Relinquished by: (Signature) Printed Name: Company: Date & Time:	Received by: (Signature) Printed Name: Company: Date & Time:									

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-5-220523	22E0401-01	Water	23-May-2022 10:45	25-May-2022 10:34
MW-5-220523	22E0401-02	Water	23-May-2022 10:45	25-May-2022 10:34
MW-2-220523	22E0401-03	Water	23-May-2022 12:55	25-May-2022 10:34
MW-2-220523	22E0401-04	Water	23-May-2022 12:55	25-May-2022 10:34
MW-1-220523	22E0401-05	Water	23-May-2022 15:15	25-May-2022 10:34
MW-1-220523	22E0401-06	Water	23-May-2022 15:15	25-May-2022 10:34
MW-3-220524	22E0401-07	Water	24-May-2022 09:05	25-May-2022 10:34
MW-3-220524	22E0401-08	Water	24-May-2022 09:05	25-May-2022 10:34
MW-X-220524	22E0401-09	Water	24-May-2022 01:00	25-May-2022 10:34
MW-X-220524	22E0401-10	Water	24-May-2022 01:00	25-May-2022 10:34
MW-4-220524	22E0401-11	Water	24-May-2022 10:55	25-May-2022 10:34
MW-4-220524	22E0401-12	Water	24-May-2022 10:55	25-May-2022 10:34
MW-6-220524	22E0401-13	Water	24-May-2022 14:20	25-May-2022 10:34
MW-6-220524	22E0401-14	Water	24-May-2022 14:20	25-May-2022 10:34
MW-7-220524	22E0401-15	Water	24-May-2022 13:15	25-May-2022 10:34
MW-7-220524	22E0401-16	Water	24-May-2022 13:15	25-May-2022 10:34
MW-8-220524	22E0401-17	Water	24-May-2022 16:20	25-May-2022 10:34
MW-8-220524	22E0401-18	Water	24-May-2022 16:20	25-May-2022 10:34
Trip blank (Cooler 1)	22E0401-19	Water	24-May-2022 00:00	25-May-2022 10:34
Trip blank (Cooler 2)	22E0401-20	Water	24-May-2022 00:00	25-May-2022 10:34



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Work Order Case Narrative

Client: Aspect Consulting, LLC.
Project: West Duwamish CSO
Project Number: 150218
Work Order: 22E0401

Sample receipt

Sample(s) as listed on the preceding page were received 25-May-2022 10:34 under ARI work order 22E0401. For details regarding sample receipt, please refer to the Cooler Receipt Form.

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except Tetrachlorometaxylene which was out of control high in the continuing calibration verification on column zb-35 and Decachlorobiphenyl which was out of control high in the initial calibration verification on column zb-35. All surrogates met on column zb-5.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD)



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Reported:
22-Jun-2022 18:27

were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries were out of control low and have been flagged. The MS/MSD relative percent difference (RPD) were within advisory control limits. Deviations have been flagged.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except Bromoform which was out of control low in the initial calibration verification. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries were within advisory limits except 2-Chloroethyl vinyl ether. The MS/MSD relative percent difference (RPD) were within advisory control limits. Deviation has been flagged.

Semivolatiles - EPA Method SW8270E

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except 2,4,6- Trichlorophenol, 2,4,5-Trichlorophenol, Fluoranthene, Butylbenzylphthalate, 3,3'-Dichlorobenzidine, Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene and Benzo(g,hi)perylene which were out of control high. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except as follows. 2-Fluorophenol, Phenol-d5 and 1,2-Dichlorobenzene-d4 were out of control low in sample 22E0401- 11. Phenol-d5 was out of control low in sample 22E0401-13. 2-Fluorophenol and Phenol-d5 were out of control low in sample 22E0401-17. Deviations have been flagged.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits except 4-Chloroaniline which was out of control low and has been flagged.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within



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Reported:
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advisory control limits except 4-Chloroaniline, Naphthalene and Benzoic Acid. Deviations have been flagged.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270E-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except surrogate Dibenzo(a,h)anthracene-d14 which was out of control high in the initial calibration verification. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except Dibenzo(a,h)anthracene-d14 which was out of control high in the initial calibration verification, sample 22F0401-07 and the blank spike. Deviations have been flagged.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Total and Dissolved Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Total and Dissolved Mercury - EPA Method 7470/7471

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.



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Project Number: 150218
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Reported:
22-Jun-2022 18:27

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.



Cooler Receipt Form

ARI Client: Aspect

Project Name: West Duwamish CSO

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 22E0401

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)
Time 1034 68, 35, 29, 3.5, 4.4, 3.1, 23

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: _____
Cooler Accepted by: SPK Date: 5/25/22 Time: 1034

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

How were bottles sealed in plastic bags? Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs)... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI: NA YES Date/Time: _____ Equipment: _____ Split by: _____

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: SD Date: 5/25/22 Time: 1515 Labels checked by: _____

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

One sample bottle 500 Ag labelled MW-1 determined to be MW-4 based on time sampled and missing MW4 with an extra MW-1. 5/25/22

None broken as noted on COC.

By: _____ Date: _____



WORK ORDER

22E0401

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

Preservation Confirmation

Container ID	Container Type	pH
22E0401-01 A	VOA Vial, Clear, 40 mL, HCL	
22E0401-01 B	VOA Vial, Clear, 40 mL, HCL	
22E0401-01 C	VOA Vial, Clear, 40 mL, HCL	
22E0401-01 D	VOA Vial, Clear, 40 mL, HCL	
22E0401-01 E	VOA Vial, Clear, 40 mL, HCL	
22E0401-01 F	Glass NM, Amber, 500 mL	
22E0401-01 G	Glass NM, Amber, 500 mL	
22E0401-01 H	Glass NM, Amber, 500 mL	
22E0401-01 I	Glass NM, Amber, 500 mL	
22E0401-01 J	Glass NM, Amber, 500 mL	
22E0401-01 K	Glass NM, Amber, 500 mL	
22E0401-01 L	Glass NM, Amber, 1000 mL	
22E0401-01 M	Glass NM, Amber, 1000 mL	
22E0401-01 N	HDPE NM, 500 mL, 1:1 HNO3	~2 p
22E0401-02 A	HDPE NM, 500 mL (FF)	lab to preserve
22E0401-03 A	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 AA	HDPE NM, 500 mL, 1:1 HNO3	~2 p
22E0401-03 AB	HDPE NM, 500 mL, 1:1 HNO3	~2 p
22E0401-03 B	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 C	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 D	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 E	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 F	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 G	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 H	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 I	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 J	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 K	Glass NM, Amber, 500 mL	
22E0401-03 L	Glass NM, Amber, 500 mL	
22E0401-03 M	Glass NM, Amber, 500 mL	
22E0401-03 N	Glass NM, Amber, 500 mL	
22E0401-03 O	Glass NM, Amber, 500 mL	
22E0401-03 P	Glass NM, Amber, 500 mL	
22E0401-03 Q	Glass NM, Amber, 500 mL	



WORK ORDER

22E0401

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Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

22E0401-03 R	Glass NM, Amber, 500 mL	
22E0401-03 S	Glass NM, Amber, 500 mL	
22E0401-03 T	Glass NM, Amber, 500 mL	
22E0401-03 U	Glass NM, Amber, 500 mL	
22E0401-03 V	Glass NM, Amber, 500 mL	just @ 10pm
22E0401-03 W	Glass NM, Amber, 1000 mL	
22E0401-03 X	Glass NM, Amber, 1000 mL	
22E0401-03 Y	Glass NM, Amber, 1000 mL	
22E0401-03 Z	Glass NM, Amber, 1000 mL	
22E0401-04 A	HDPE NM, 500 mL (FF)	lab to preserve
22E0401-04 B	HDPE NM, 500 mL (FF)	lab to preserve
22E0401-05 A	VOA Vial, Clear, 40 mL, HCL	
22E0401-05 B	VOA Vial, Clear, 40 mL, HCL	
22E0401-05 C	VOA Vial, Clear, 40 mL, HCL	
22E0401-05 D	VOA Vial, Clear, 40 mL, HCL	
22E0401-05 E	VOA Vial, Clear, 40 mL, HCL	
22E0401-05 F	Glass NM, Amber, 500 mL	
22E0401-05 G	Glass NM, Amber, 500 mL	
22E0401-05 H	Glass NM, Amber, 500 mL	
22E0401-05 I	Glass NM, Amber, 500 mL	
22E0401-05 J	Glass NM, Amber, 500 mL	
22E0401-05 K	Glass NM, Amber, 500 mL	
22E0401-05 L	Glass NM, Amber, 1000 mL	
22E0401-05 M	Glass NM, Amber, 1000 mL	
22E0401-05 N	HDPE NM, 500 mL, 1:1 HNO3	L2 f
22E0401-06 A	HDPE NM, 500 mL (FF)	lab to preserve
22E0401-07 A	VOA Vial, Clear, 40 mL, HCL	
22E0401-07 B	VOA Vial, Clear, 40 mL, HCL	
22E0401-07 C	VOA Vial, Clear, 40 mL, HCL	
22E0401-07 D	VOA Vial, Clear, 40 mL, HCL	
22E0401-07 E	VOA Vial, Clear, 40 mL, HCL	
22E0401-07 F	Glass NM, Amber, 500 mL	
22E0401-07 G	Glass NM, Amber, 500 mL	
22E0401-07 H	Glass NM, Amber, 500 mL	
22E0401-07 I	Glass NM, Amber, 500 mL	
22E0401-07 J	Glass NM, Amber, 500 mL	



WORK ORDER

22E0401

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Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

22E0401-07 K	Glass NM, Amber, 500 mL		
22E0401-07 L	Glass NM, Amber, 1000 mL		
22E0401-07 M	Glass NM, Amber, 1000 mL		
22E0401-07 N	HDPE NM, 500 mL, 1:1 HNO3	L2	P
22E0401-08 A	HDPE NM, 500 mL (FF)		lab to preserve
22E0401-09 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-09 B	VOA Vial, Clear, 40 mL, HCL		
22E0401-09 C	VOA Vial, Clear, 40 mL, HCL		
22E0401-09 D	VOA Vial, Clear, 40 mL, HCL		
22E0401-09 E	VOA Vial, Clear, 40 mL, HCL		
22E0401-09 F	Glass NM, Amber, 500 mL		
22E0401-09 G	Glass NM, Amber, 500 mL		
22E0401-09 H	Glass NM, Amber, 500 mL		
22E0401-09 I	Glass NM, Amber, 500 mL		
22E0401-09 J	Glass NM, Amber, 500 mL		
22E0401-09 K	Glass NM, Amber, 500 mL		
22E0401-09 L	Glass NM, Amber, 1000 mL		
22E0401-09 M	Glass NM, Amber, 1000 mL		
22E0401-09 N	HDPE NM, 500 mL, 1:1 HNO3	L2	P
22E0401-10 A	HDPE NM, 500 mL (FF)		lab to preserve
22E0401-11 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-11 B	VOA Vial, Clear, 40 mL, HCL		
22E0401-11 C	VOA Vial, Clear, 40 mL, HCL		
22E0401-11 D	VOA Vial, Clear, 40 mL, HCL		
22E0401-11 E	VOA Vial, Clear, 40 mL, HCL		
22E0401-11 F	Glass NM, Amber, 500 mL		
22E0401-11 G	Glass NM, Amber, 500 mL		
22E0401-11 H	Glass NM, Amber, 500 mL		
22E0401-11 I	Glass NM, Amber, 500 mL		
22E0401-11 J	Glass NM, Amber, 500 mL		
22E0401-11 K	Glass NM, Amber, 500 mL		
22E0401-11 L	Glass NM, Amber, 1000 mL		
22E0401-11 M	Glass NM, Amber, 1000 mL		
22E0401-11 N	HDPE NM, 500 mL, 1:1 HNO3	L2	P
22E0401-12 A	HDPE NM, 500 mL (FF)		lab to preserve
22E0401-13 A	VOA Vial, Clear, 40 mL, HCL		



WORK ORDER

22E0401

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Project Number: 150218

22E0401-13 B	VOA Vial, Clear, 40 mL, HCL		
22E0401-13 C	VOA Vial, Clear, 40 mL, HCL		
22E0401-13 D	VOA Vial, Clear, 40 mL, HCL		
22E0401-13 E	VOA Vial, Clear, 40 mL, HCL		
22E0401-13 F	Glass NM, Amber, 500 mL		
22E0401-13 G	Glass NM, Amber, 500 mL		
22E0401-13 H	Glass NM, Amber, 500 mL		
22E0401-13 I	Glass NM, Amber, 500 mL		
22E0401-13 J	Glass NM, Amber, 500 mL		
22E0401-13 K	Glass NM, Amber, 500 mL		
22E0401-13 L	Glass NM, Amber, 1000 mL		
22E0401-13 M	Glass NM, Amber, 1000 mL		
22E0401-13 N	HDPE NM, 500 mL, 1:1 HNO3	22 P	
22E0401-14 A	HDPE NM, 500 mL (FF)		lab to preserve
22E0401-15 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-15 B	VOA Vial, Clear, 40 mL, HCL		
22E0401-15 C	VOA Vial, Clear, 40 mL, HCL		
22E0401-15 D	VOA Vial, Clear, 40 mL, HCL		
22E0401-15 E	VOA Vial, Clear, 40 mL, HCL		
22E0401-15 F	Glass NM, Amber, 500 mL		
22E0401-15 G	Glass NM, Amber, 500 mL		
22E0401-15 H	Glass NM, Amber, 500 mL		
22E0401-15 I	Glass NM, Amber, 500 mL		
22E0401-15 J	Glass NM, Amber, 500 mL		
22E0401-15 K	Glass NM, Amber, 500 mL		
22E0401-15 L	Glass NM, Amber, 1000 mL		
22E0401-15 M	Glass NM, Amber, 1000 mL		
22E0401-15 N	HDPE NM, 500 mL, 1:1 HNO3	22 P	
22E0401-16 A	HDPE NM, 500 mL (FF)		lab to preserve
22E0401-17 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-17 B	VOA Vial, Clear, 40 mL, HCL		
22E0401-17 C	VOA Vial, Clear, 40 mL, HCL		
22E0401-17 D	VOA Vial, Clear, 40 mL, HCL		
22E0401-17 E	VOA Vial, Clear, 40 mL, HCL		
22E0401-17 F	Glass NM, Amber, 500 mL		
22E0401-17 G	Glass NM, Amber, 500 mL		



WORK ORDER

22E0401

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Project Number: 150218

22E0401-17 H	Glass NM, Amber, 500 mL		
22E0401-17 I	Glass NM, Amber, 500 mL		
22E0401-17 J	Glass NM, Amber, 500 mL		
22E0401-17 K	Glass NM, Amber, 500 mL		
22E0401-17 L	Glass NM, Amber, 1000 mL		
22E0401-17 M	Glass NM, Amber, 1000 mL		
22E0401-17 N	HDPE NM, 500 mL, 1:1 HNO3	C2	P
22E0401-18 A	HDPE NM, 500 mL (FF)		Lab to return
22E0401-19 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-20 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-21 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-22 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-23 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-24 A	VOA Vial, Clear, 40 mL, HCL		

SD

Preservation Confirmed By

5/25/22

Date



WORK ORDER

22E0401

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

Preservation Confirmation

Container ID	Container Type	pH
22E0401-01 A	VOA Vial, Clear, 40 mL, HCL	
22E0401-01 B	VOA Vial, Clear, 40 mL, HCL	
22E0401-01 C	VOA Vial, Clear, 40 mL, HCL	
22E0401-01 D	VOA Vial, Clear, 40 mL, HCL	
22E0401-01 E	VOA Vial, Clear, 40 mL, HCL	
22E0401-01 F	Glass NM, Amber, 500 mL	
22E0401-01 G	Glass NM, Amber, 500 mL	
22E0401-01 H	Glass NM, Amber, 500 mL	
22E0401-01 I	Glass NM, Amber, 500 mL	
22E0401-01 J	Glass NM, Amber, 500 mL	
22E0401-01 K	Glass NM, Amber, 500 mL	
22E0401-01 L	Glass NM, Amber, 1000 mL	
22E0401-01 M	Glass NM, Amber, 1000 mL	
22E0401-01 N	HDPE NM, 500 mL, 1:1 HNO3	22 P
22E0401-02 A	HDPE NM, 500 mL (FF)	lab to preserve ①
22E0401-03 A	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 AA	HDPE NM, 500 mL, 1:1 HNO3	22 P
22E0401-03 AB	HDPE NM, 500 mL, 1:1 HNO3	22 P
22E0401-03 B	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 C	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 D	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 E	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 F	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 G	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 H	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 I	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 J	VOA Vial, Clear, 40 mL, HCL	
22E0401-03 K	Glass NM, Amber, 500 mL	
22E0401-03 L	Glass NM, Amber, 500 mL	
22E0401-03 M	Glass NM, Amber, 500 mL	
22E0401-03 N	Glass NM, Amber, 500 mL	
22E0401-03 O	Glass NM, Amber, 500 mL	
22E0401-03 P	Glass NM, Amber, 500 mL	
22E0401-03 Q	Glass NM, Amber, 500 mL	

Reviewed By _____

Date _____



WORK ORDER

22E0401

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

22E0401-03 R	Glass NM, Amber, 500 mL	
22E0401-03 S	Glass NM, Amber, 500 mL	
22E0401-03 T	Glass NM, Amber, 500 mL	
22E0401-03 U	Glass NM, Amber, 500 mL	
22E0401-03 V	Glass NM, Amber, 500 mL	lost @ lab
22E0401-03 W	Glass NM, Amber, 1000 mL	
22E0401-03 X	Glass NM, Amber, 1000 mL	
22E0401-03 Y	Glass NM, Amber, 1000 mL	
22E0401-03 Z	Glass NM, Amber, 1000 mL	
22E0401-04 A	HDPE NM, 500 mL (FF)	lab to preserve (1)
22E0401-04 B	HDPE NM, 500 mL (FF)	lab to preserve
22E0401-05 A	VOA Vial, Clear, 40 mL, HCL	
22E0401-05 B	VOA Vial, Clear, 40 mL, HCL	
22E0401-05 C	VOA Vial, Clear, 40 mL, HCL	
22E0401-05 D	VOA Vial, Clear, 40 mL, HCL	
22E0401-05 E	VOA Vial, Clear, 40 mL, HCL	
22E0401-05 F	Glass NM, Amber, 500 mL	
22E0401-05 G	Glass NM, Amber, 500 mL	
22E0401-05 H	Glass NM, Amber, 500 mL	
22E0401-05 I	Glass NM, Amber, 500 mL	
22E0401-05 J	Glass NM, Amber, 500 mL	
22E0401-05 K	Glass NM, Amber, 500 mL	
22E0401-05 L	Glass NM, Amber, 1000 mL	
22E0401-05 M	Glass NM, Amber, 1000 mL	
22E0401-05 N	HDPE NM, 500 mL, 1:1 HNO3	L2 lab to preserve (1)
22E0401-06 A	HDPE NM, 500 mL (FF)	
22E0401-07 A	VOA Vial, Clear, 40 mL, HCL	
22E0401-07 B	VOA Vial, Clear, 40 mL, HCL	
22E0401-07 C	VOA Vial, Clear, 40 mL, HCL	
22E0401-07 D	VOA Vial, Clear, 40 mL, HCL	
22E0401-07 E	VOA Vial, Clear, 40 mL, HCL	
22E0401-07 F	Glass NM, Amber, 500 mL	
22E0401-07 G	Glass NM, Amber, 500 mL	
22E0401-07 H	Glass NM, Amber, 500 mL	
22E0401-07 I	Glass NM, Amber, 500 mL	
22E0401-07 J	Glass NM, Amber, 500 mL	



WORK ORDER

22E0401

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

22E0401-07 K	Glass NM, Amber, 500 mL		
22E0401-07 L	Glass NM, Amber, 1000 mL		
22E0401-07 M	Glass NM, Amber, 1000 mL		
22E0401-07 N	HDPE NM, 500 mL, 1:1 HNO3	L2	P
22E0401-08 A	HDPE NM, 500 mL (FF)		lab to preserve (D)
22E0401-09 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-09 B	VOA Vial, Clear, 40 mL, HCL		
22E0401-09 C	VOA Vial, Clear, 40 mL, HCL		
22E0401-09 D	VOA Vial, Clear, 40 mL, HCL		
22E0401-09 E	VOA Vial, Clear, 40 mL, HCL		
22E0401-09 F	Glass NM, Amber, 500 mL		
22E0401-09 G	Glass NM, Amber, 500 mL		
22E0401-09 H	Glass NM, Amber, 500 mL		
22E0401-09 I	Glass NM, Amber, 500 mL		
22E0401-09 J	Glass NM, Amber, 500 mL		
22E0401-09 K	Glass NM, Amber, 500 mL		
22E0401-09 L	Glass NM, Amber, 1000 mL		
22E0401-09 M	Glass NM, Amber, 1000 mL		
22E0401-09 N	HDPE NM, 500 mL, 1:1 HNO3	L2	P
22E0401-10 A	HDPE NM, 500 mL (FF)		lab to preserve (D)
22E0401-11 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-11 B	VOA Vial, Clear, 40 mL, HCL		
22E0401-11 C	VOA Vial, Clear, 40 mL, HCL		
22E0401-11 D	VOA Vial, Clear, 40 mL, HCL		
22E0401-11 E	VOA Vial, Clear, 40 mL, HCL		
22E0401-11 F	Glass NM, Amber, 500 mL		
22E0401-11 G	Glass NM, Amber, 500 mL		
22E0401-11 H	Glass NM, Amber, 500 mL		
22E0401-11 I	Glass NM, Amber, 500 mL		
22E0401-11 J	Glass NM, Amber, 500 mL		
22E0401-11 K	Glass NM, Amber, 500 mL		
22E0401-11 L	Glass NM, Amber, 1000 mL		
22E0401-11 M	Glass NM, Amber, 1000 mL		
22E0401-11 N	HDPE NM, 500 mL, 1:1 HNO3	L2	P
22E0401-12 A	HDPE NM, 500 mL (FF)		lab to preserve (D)
22E0401-13 A	VOA Vial, Clear, 40 mL, HCL		



WORK ORDER

22E0401

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

22E0401-13 B	VOA Vial, Clear, 40 mL, HCL		
22E0401-13 C	VOA Vial, Clear, 40 mL, HCL		
22E0401-13 D	VOA Vial, Clear, 40 mL, HCL		
22E0401-13 E	VOA Vial, Clear, 40 mL, HCL		
22E0401-13 F	Glass NM, Amber, 500 mL		
22E0401-13 G	Glass NM, Amber, 500 mL		
22E0401-13 H	Glass NM, Amber, 500 mL		
22E0401-13 I	Glass NM, Amber, 500 mL		
22E0401-13 J	Glass NM, Amber, 500 mL		
22E0401-13 K	Glass NM, Amber, 500 mL		
22E0401-13 L	Glass NM, Amber, 1000 mL		
22E0401-13 M	Glass NM, Amber, 1000 mL		
22E0401-13 N	HDPE NM, 500 mL, 1:1 HNO3	22 P	
22E0401-14 A	HDPE NM, 500 mL (FF)		lab to phase ①
22E0401-15 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-15 B	VOA Vial, Clear, 40 mL, HCL		
22E0401-15 C	VOA Vial, Clear, 40 mL, HCL		
22E0401-15 D	VOA Vial, Clear, 40 mL, HCL		
22E0401-15 E	VOA Vial, Clear, 40 mL, HCL		
22E0401-15 F	Glass NM, Amber, 500 mL		
22E0401-15 G	Glass NM, Amber, 500 mL		
22E0401-15 H	Glass NM, Amber, 500 mL		
22E0401-15 I	Glass NM, Amber, 500 mL		
22E0401-15 J	Glass NM, Amber, 500 mL		
22E0401-15 K	Glass NM, Amber, 500 mL		
22E0401-15 L	Glass NM, Amber, 1000 mL		
22E0401-15 M	Glass NM, Amber, 1000 mL		
22E0401-15 N	HDPE NM, 500 mL, 1:1 HNO3	22 P	
22E0401-16 A	HDPE NM, 500 mL (FF)		lab to phase ①
22E0401-17 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-17 B	VOA Vial, Clear, 40 mL, HCL		
22E0401-17 C	VOA Vial, Clear, 40 mL, HCL		
22E0401-17 D	VOA Vial, Clear, 40 mL, HCL		
22E0401-17 E	VOA Vial, Clear, 40 mL, HCL		
22E0401-17 F	Glass NM, Amber, 500 mL		
22E0401-17 G	Glass NM, Amber, 500 mL		



WORK ORDER

22E0401

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Aspect Consulting, LLC.	Project Manager: Shelly Fishel
Project: West Duwamish CSO	Project Number: 150218

22E0401-17 H	Glass NM, Amber, 500 mL		
22E0401-17 I	Glass NM, Amber, 500 mL		
22E0401-17 J	Glass NM, Amber, 500 mL		
22E0401-17 K	Glass NM, Amber, 500 mL		
22E0401-17 L	Glass NM, Amber, 1000 mL		
22E0401-17 M	Glass NM, Amber, 1000 mL		
22E0401-17 N	HDPE NM, 500 mL, 1:1 HNO3	C2	P
22E0401-18 A	HDPE NM, 500 mL (FF)		Lab to return ①
22E0401-19 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-20 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-21 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-22 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-23 A	VOA Vial, Clear, 40 mL, HCL		
22E0401-24 A	VOA Vial, Clear, 40 mL, HCL		

80
Preservation Confirmed By

5/25/22
Date

① preserve roughs 2
w/ 1.0M conc. HNO₃
(K5476) MM 6/7/22



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-5-220523
22E0401-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/23/2022 10:45

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 17:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKE0797
Prepared: 05/31/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22E0401-01 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-5-220523
22E0401-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/23/2022 10:45

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 17:20

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-5-220523
22E0401-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/23/2022 10:45

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 17:20

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	112	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	99.7	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	99.7	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	99.1	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 22-Jun-2022 18:27
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MW-5-220523
22E0401-01 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/23/2022 10:45
Instrument: NT2 Analyst: LH Analyzed: 06/01/2022 09:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22E0401-01 C
Preparation Batch: BKF0002 Sample Size: 10 mL
Prepared: 06/01/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	100	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	99.9	%	



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-5-220523
22E0401-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/23/2022 10:45

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 14:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKE0704
Prepared: 05/27/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22E0401-01 L 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-5-220523
22E0401-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/23/2022 10:45

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 14:14

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	7.3	ug/L	
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>66.0 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>38.5 %</i>	
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>98.7 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>85.8 %</i>	
<i>Surrogate: Nitrobenzene-d5</i>					<i>30-160 %</i>	<i>103 %</i>	



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MW-5-220523
22E0401-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/23/2022 10:45
Instrument: NT14 Analyst: VTS Analyzed: 06/09/2022 14:14

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	105	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	114	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	121	%	



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MW-5-220523
22E0401-01 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 05/23/2022 10:45

Instrument: NT11 Analyst: VTS

Analyzed: 06/21/2022 13:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-01 F 01
Preparation Batch: BKE0703 Sample Size: 430 mL
Prepared: 05/27/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22E0401-01 F 01
Cleanup Batch: CKF0144 Initial Volume: 0.5 uL
Cleaned: 20-Jun-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.002	0.012	0.007	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.012	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.001	0.012	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.012	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.012	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.012	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.012	ND	ug/L	U
Phenanthrene	85-01-8	1	0.002	0.012	0.006	ug/L	J
Anthracene	120-12-7	1	0.001	0.012	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.012	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.012	0.003	ug/L	J
Pyrene	129-00-0	1	0.001	0.012	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0009	0.012	ND	ug/L	U
Chrysene	218-01-9	1	0.001	0.012	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.012	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.004	0.012	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.012	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.012	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.003	0.012	ND	ug/L	U
Perylene	198-55-0	1	0.007	0.012	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.012	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.002	0.012	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.002	0.012	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 79.1 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 119 % Q

Surrogate: Fluoranthene-d10

57-120 % 99.0 %



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MW-5-220523
22E0401-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/23/2022 10:45
Instrument: FID4 Analyst: CTO Analyzed: 06/06/2022 22:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-01 H 01
Preparation Batch: BKE0706 Sample Size: 500 mL
Prepared: 05/27/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	95.9	%	



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MW-5-220523
22E0401-01 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 05/23/2022 10:45
Instrument: ECD7 Analyst: JGR Analyzed: 06/20/2022 11:51

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKE0746 Prepared: 05/27/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22E0401-01 M 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKF0154 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-01 M 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKF0152 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-01 M 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKF0153 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-01 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	76.3 %
Surrogate: Tetrachlorometaxylene	32-120 %	63.3 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	90.2 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	61.9 %



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MW-5-220523
22E0401-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/23/2022 10:45
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 21:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-01 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 20:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-01 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.153	ug/L	J
Beryllium	7440-41-7	1	0.0171	0.200	0.0190	ug/L	J
Chromium	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U



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MW-5-220523
22E0401-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/23/2022 10:45
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 20:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-01 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.57	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	1.11	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	1.71	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-5-220523
22E0401-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/23/2022 10:45
Instrument: HYDRA Analyst: ML Analyzed: 06/13/2022 14:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-01 N
Preparation Batch: BKF0199 Sample Size: 20 mL
Prepared: 06/08/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000047	mg/L	J



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MW-5-220523
22E0401-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 05/23/2022 10:45
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 22:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-02 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.166	ug/L	J
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0230	ug/L	J
Chromium, Dissolved	7440-47-3	1	0.260	0.500	0.414	ug/L	J
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-5-220523
22E0401-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/23/2022 10:45
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 22:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-02 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.52	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	1.23	ug/L	
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	1.81	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.336	ug/L	J
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-5-220523
22E0401-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/23/2022 10:45
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 13:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-02 A
Preparation Batch: BKF0139 Sample Size: 20 mL
Prepared: 06/07/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-2-220523
22E0401-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/23/2022 12:55

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 17:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKE0797
Prepared: 05/31/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22E0401-03 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project Manager: Zanna Satterwhite

Reported:
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MW-2-220523
22E0401-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/23/2022 12:55

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 17:41

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-2-220523
22E0401-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/23/2022 12:55

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 17:41

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	99.2	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	99.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	102	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	101	%	



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MW-2-220523
22E0401-03 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/23/2022 12:55
Instrument: NT2 Analyst: LH Analyzed: 06/01/2022 09:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22E0401-03 E
Preparation Batch: BKF0002 Sample Size: 10 mL
Prepared: 06/01/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.0	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	105	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-2-220523
22E0401-03 (Water)

Semivolatiles Organic Compounds

Method: EPA 8270E

Sampled: 05/23/2022 12:55

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 16:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKE0704
Prepared: 05/27/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22E0401-03 W 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	0.2	ug/L	J



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-2-220523
22E0401-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/23/2022 12:55

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 16:05

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	54.4 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	32.4 %	
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	79.7 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	68.4 %	
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	82.2 %	



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MW-2-220523
22E0401-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/23/2022 12:55
Instrument: NT14 Analyst: VTS Analyzed: 06/09/2022 16:05

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	87.9	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	104	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	119	%	



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MW-2-220523
22E0401-03 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/23/2022 12:55
Instrument: NT11 Analyst: VTS Analyzed: 06/21/2022 13:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-03 K 01
Preparation Batch: BKE0703 Sample Size: 430 mL
Prepared: 05/27/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22E0401-03 K 01
Cleanup Batch: CKF0144 Initial Volume: 0.5 uL
Cleaned: 20-Jun-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.002	0.012	0.008	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.012	0.005	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.001	0.012	0.003	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.012	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.012	0.229	ug/L	
Dibenzofuran	132-64-9	1	0.002	0.012	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.012	ND	ug/L	U
Phenanthrene	85-01-8	1	0.002	0.012	0.003	ug/L	J
Anthracene	120-12-7	1	0.001	0.012	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.012	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.012	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.012	0.001	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0009	0.012	ND	ug/L	U
Chrysene	218-01-9	1	0.001	0.012	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.012	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.004	0.012	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.012	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.012	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.003	0.012	ND	ug/L	U
Perylene	198-55-0	1	0.007	0.012	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.012	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.002	0.012	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.002	0.012	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 77.2 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 120 % Q
Surrogate: Fluoranthene-d10 57-120 % 97.1 %



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MW-2-220523
22E0401-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/23/2022 12:55
Instrument: FID4 Analyst: CTO Analyzed: 06/06/2022 22:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-03 O 01
Preparation Batch: BKE0706 Sample Size: 435 mL
Prepared: 05/27/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.115	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.230	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	98.6	%	



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MW-2-220523
22E0401-03 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 05/23/2022 12:55
Instrument: ECD7 Analyst: JGR Analyzed: 06/20/2022 12:13

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKE0746 Prepared: 05/27/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22E0401-03 Z 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKF0154 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-03 Z 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKF0152 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-03 Z 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKF0153 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-03 Z 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	78.8	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	66.5	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	93.3	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	64.8	%



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MW-2-220523
22E0401-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/23/2022 12:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 22:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-03 AA 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 19:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-03 AA 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.221	ug/L	
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	0.736	ug/L	
Lead	7439-92-1	1	0.0513	0.100	0.0910	ug/L	J
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U



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MW-2-220523
22E0401-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/23/2022 12:55
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 19:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-03 AA 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.198	ug/L	J
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.246	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.132	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.501	ug/L	
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-2-220523
22E0401-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/23/2022 12:55
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 11:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-03 AA
Preparation Batch: BKF0109 Sample Size: 20 mL
Prepared: 06/06/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000026	mg/L	J



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MW-2-220523
22E0401-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 05/23/2022 12:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/09/2022 00:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-04 B 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	1	0.260	0.500	0.602	ug/L	
Lead, Dissolved	7439-92-1	1	0.0513	0.100	0.0540	ug/L	J
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 22-Jun-2022 18:27
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MW-2-220523
22E0401-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/23/2022 12:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/09/2022 00:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-04 B 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.157	ug/L	J
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.224	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.150	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.211	ug/L	J
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-2-220523
22E0401-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/23/2022 12:55
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 13:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-04 B
Preparation Batch: BKF0139 Sample Size: 20 mL
Prepared: 06/07/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-1-220523
22E0401-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/23/2022 15:15

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 18:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKE0797
Prepared: 05/31/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22E0401-05 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-1-220523
22E0401-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/23/2022 15:15

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 18:03

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-1-220523
22E0401-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/23/2022 15:15

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 18:03

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	110	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	102	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	102	%	



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MW-1-220523
22E0401-05 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/23/2022 15:15
Instrument: NT2 Analyst: LH Analyzed: 06/01/2022 09:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22E0401-05 C
Preparation Batch: BKF0002 Sample Size: 10 mL
Prepared: 06/01/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.0	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	100	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-1-220523
22E0401-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/23/2022 15:15

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 16:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKE0704
Prepared: 05/27/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22E0401-05 L 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-1-220523
22E0401-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/23/2022 15:15

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 16:42

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>50.5 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>30.0 %</i>	
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>75.8 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>68.8 %</i>	
<i>Surrogate: Nitrobenzene-d5</i>					<i>30-160 %</i>	<i>81.6 %</i>	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-1-220523
22E0401-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/23/2022 15:15

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 16:42

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	85.0	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	90.9	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	110	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-1-220523
22E0401-05 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/23/2022 15:15
Instrument: NT11 Analyst: VTS Analyzed: 06/21/2022 15:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-05 F 01
Preparation Batch: BKE0703 Sample Size: 435 mL
Prepared: 05/27/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22E0401-05 F 01
Cleanup Batch: CKF0144 Initial Volume: 0.5 uL
Cleaned: 20-Jun-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.002	0.011	0.007	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.011	0.005	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.001	0.011	0.003	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.011	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.011	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.011	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.011	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.011	0.003	ug/L	J
Anthracene	120-12-7	1	0.001	0.011	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.011	0.002	ug/L	J
Fluoranthene	206-44-0	1	0.002	0.011	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.011	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0009	0.011	ND	ug/L	U
Chrysene	218-01-9	1	0.001	0.011	0.002	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.011	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.004	0.011	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.011	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.011	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.003	0.011	ND	ug/L	U
Perylene	198-55-0	1	0.007	0.011	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.011	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.002	0.011	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.002	0.011	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 78.0 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 119 % Q

Surrogate: Fluoranthene-d10

57-120 % 95.4 %



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MW-1-220523
22E0401-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/23/2022 15:15
Instrument: FID4 Analyst: CTO Analyzed: 06/06/2022 22:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-05 H 01
Preparation Batch: BKE0706 Sample Size: 500 mL
Prepared: 05/27/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	93.1	%	



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MW-1-220523
22E0401-05 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 05/23/2022 15:15
Instrument: ECD7 Analyst: JGR Analyzed: 06/20/2022 13:18

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKE0746 Prepared: 05/27/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22E0401-05 M 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKF0154 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-05 M 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKF0152 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-05 M 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKF0153 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-05 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	78.6 %
Surrogate: Tetrachlorometaxylene	32-120 %	64.4 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	90.7 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	60.1 %



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MW-1-220523
22E0401-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 05/23/2022 15:15

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/08/2022 21:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Extract ID: 22E0401-05 N 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/07/2022 20:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Extract ID: 22E0401-05 N 02

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	0.0730	ug/L	J
Chromium	7440-47-3	1	0.260	0.500	2.37	ug/L	
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U



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MW-1-220523
22E0401-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 05/23/2022 15:15

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/07/2022 20:49

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Extract ID: 22E0401-05 N 02

Preparation Batch: BKF0141

Sample Size: 25 mL

Prepared: 06/07/2022

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.701	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.276	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.271	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-1-220523
22E0401-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/23/2022 15:15
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 12:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-05 N
Preparation Batch: BKF0109 Sample Size: 20 mL
Prepared: 06/06/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000016	mg/L	J



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MW-1-220523
22E0401-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 05/23/2022 15:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 23:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-06 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0710	ug/L	J
Chromium, Dissolved	7440-47-3	1	0.260	0.500	1.97	ug/L	
Lead, Dissolved	7439-92-1	1	0.0513	0.100	0.0700	ug/L	J
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-1-220523
22E0401-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/23/2022 15:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 23:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-06 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.721	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.495	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.318	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.284	ug/L	J
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-1-220523
22E0401-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/23/2022 15:15
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 13:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-06 A
Preparation Batch: BKF0139 Sample Size: 20 mL
Prepared: 06/07/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-3-220524
22E0401-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 09:05

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 18:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKE0797
Prepared: 05/31/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22E0401-07 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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MW-3-220524
22E0401-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 09:05

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 18:24

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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MW-3-220524
22E0401-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/24/2022 09:05
Instrument: NT2 Analyst: PKC Analyzed: 05/31/2022 18:24

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				<i>80-129 %</i>	<i>112</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>				<i>80-120 %</i>	<i>99.6</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>102</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				<i>80-120 %</i>	<i>101</i>	<i>%</i>	



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MW-3-220524
22E0401-07 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/24/2022 09:05
Instrument: NT2 Analyst: LH Analyzed: 06/01/2022 10:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22E0401-07 B
Preparation Batch: BKF0002 Sample Size: 10 mL
Prepared: 06/01/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.2	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	99.5	%	



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MW-3-220524
22E0401-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 09:05

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 17:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKE0704
Prepared: 05/27/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22E0401-07 L 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-3-220524
22E0401-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 09:05

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 17:19

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	57.7	%
<i>Surrogate: Phenol-d5</i>					30-160 %	33.8	%
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	96.2	%
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	76.2	%
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	94.8	%



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MW-3-220524
22E0401-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/24/2022 09:05
Instrument: NT14 Analyst: VTS Analyzed: 06/09/2022 17:19

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	103	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	106	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	123	%	



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MW-3-220524
22E0401-07 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/24/2022 09:05
Instrument: NT11 Analyst: VTS Analyzed: 06/21/2022 15:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-07 F 01
Preparation Batch: BKE0703 Sample Size: 500 mL
Prepared: 05/27/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22E0401-07 F 01
Cleanup Batch: CKF0144 Initial Volume: 0.5 uL
Cleaned: 20-Jun-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.008	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.005	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.002	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 83.1 %
 Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 121 % *, Q
 Surrogate: Fluoranthene-d10 57-120 % 97.0 %



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MW-3-220524
22E0401-07 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/24/2022 09:05
Instrument: FID4 Analyst: CTO Analyzed: 06/06/2022 23:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-07 H 01
Preparation Batch: BKE0706 Sample Size: 420 mL
Prepared: 05/27/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.119	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.238	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	62.3	%	



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MW-3-220524
22E0401-07 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 05/24/2022 09:05

Instrument: ECD7 Analyst: JGR

Analyzed: 06/20/2022 13:40

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKE0746 Prepared: 05/27/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22E0401-07 M 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKF0154 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-07 M 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKF0152 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-07 M 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKF0153 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-07 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	80.6 %
Surrogate: Tetrachlorometaxylene	32-120 %	62.5 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	92.3 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	60.6 %



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MW-3-220524
22E0401-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/24/2022 09:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 20:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-07 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 20:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-07 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U



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MW-3-220524
22E0401-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 05/24/2022 09:05

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/07/2022 20:55

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Extract ID: 22E0401-07 N 02

Preparation Batch: BKF0141

Sample Size: 25 mL

Prepared: 06/07/2022

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.257	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	1.14	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	2.27	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-3-220524
22E0401-07 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/24/2022 09:05
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 12:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-07 N
Preparation Batch: BKF0109 Sample Size: 20 mL
Prepared: 06/06/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000022	mg/L	J



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MW-3-220524
22E0401-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 05/24/2022 09:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 21:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-08 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-3-220524
22E0401-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/24/2022 09:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 21:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-08 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.271	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	1.15	ug/L	
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	2.28	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-3-220524
22E0401-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/24/2022 09:05
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 13:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-08 A
Preparation Batch: BKF0139 Sample Size: 20 mL
Prepared: 06/07/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Reported:
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MW-X-220524
22E0401-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 18:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKE0797
Prepared: 05/31/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22E0401-09 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-X-220524
22E0401-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 18:45

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-X-220524
22E0401-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 18:45

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	105	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	100	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	102	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	103	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 22-Jun-2022 18:27
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MW-X-220524
22E0401-09 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/24/2022 01:00
Instrument: NT2 Analyst: LH Analyzed: 06/01/2022 10:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22E0401-09 C
Preparation Batch: BKF0002 Sample Size: 10 mL
Prepared: 06/01/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.2	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	101	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-X-220524
22E0401-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 01:00

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 17:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKE0704
Prepared: 05/27/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22E0401-09 L 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-X-220524
22E0401-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 01:00

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 17:56

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	0.3	ug/L	
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>61.3 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>36.9 %</i>	
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>88.3 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>73.6 %</i>	
<i>Surrogate: Nitrobenzene-d5</i>					<i>30-160 %</i>	<i>91.3 %</i>	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-X-220524
22E0401-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 01:00

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 17:56

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	90.3	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	99.9	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	111	%	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-X-220524
22E0401-09 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/24/2022 01:00
Instrument: NT11 Analyst: VTS Analyzed: 06/21/2022 16:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-09 F 01
Preparation Batch: BKE0703 Sample Size: 450 mL
Prepared: 05/27/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22E0401-09 F 01
Cleanup Batch: CKF0144 Initial Volume: 0.5 uL
Cleaned: 20-Jun-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.011	0.008	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.011	0.005	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.001	0.011	0.003	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.011	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.011	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.011	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.011	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.011	0.002	ug/L	J
Anthracene	120-12-7	1	0.001	0.011	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.011	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.011	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.011	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.011	ND	ug/L	U
Chrysene	218-01-9	1	0.001	0.011	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.011	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.004	0.011	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.011	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.011	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.003	0.011	ND	ug/L	U
Perylene	198-55-0	1	0.007	0.011	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.011	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.011	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.002	0.011	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 83.6 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 119 % Q
Surrogate: Fluoranthene-d10 57-120 % 96.6 %



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MW-X-220524
22E0401-09 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/24/2022 01:00
Instrument: FID4 Analyst: CTO Analyzed: 06/06/2022 23:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-09 H 01
Preparation Batch: BKE0706 Sample Size: 455 mL
Prepared: 05/27/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.110	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.220	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	107	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 22-Jun-2022 18:27
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MW-X-220524
22E0401-09 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 05/24/2022 01:00
Instrument: ECD7 Analyst: JGR Analyzed: 06/20/2022 14:01

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKE0746 Prepared: 05/27/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22E0401-09 M 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKF0154 Cleared: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-09 M 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKF0152 Cleared: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-09 M 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKF0153 Cleared: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-09 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	79.0 %
Surrogate: Tetrachlorometaxylene	32-120 %	56.5 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	88.2 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	53.5 %



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MW-X-220524
22E0401-09 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/24/2022 01:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 21:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-09 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 21:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-09 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	0.297	ug/L	J
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U



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MW-X-220524
22E0401-09 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/24/2022 01:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 21:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-09 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	0.292	ug/L	
Copper	7440-50-8	1	0.173	0.500	1.16	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	2.32	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 21:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-09 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U



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MW-X-220524
22E0401-09 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/24/2022 01:00
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 12:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-09 N
Preparation Batch: BKF0109 Sample Size: 20 mL
Prepared: 06/06/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000018	mg/L	J



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Project Manager: Zanna Satterwhite

Reported:
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MW-X-220524
22E0401-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B

Sampled: 05/24/2022 01:00

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/08/2022 23:38

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Extract ID: 22E0401-10 A 02

Preparation Batch: BKF0196

Sample Size: 25 mL

Prepared: 06/08/2022

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.109	ug/L	J
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-X-220524
22E0401-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/24/2022 01:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 23:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-10 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.321	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	1.07	ug/L	
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	2.23	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.263	ug/L	J
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-X-220524
22E0401-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/24/2022 01:00
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 13:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-10 A
Preparation Batch: BKF0139 Sample Size: 20 mL
Prepared: 06/07/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-4-220524
22E0401-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 10:55

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 19:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKE0797
Prepared: 05/31/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22E0401-11 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-4-220524
22E0401-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 10:55

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 19:06

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-4-220524
22E0401-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 10:55

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 19:06

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	107	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	97.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	97.8	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	99.7	%	



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MW-4-220524
22E0401-11 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/24/2022 10:55
Instrument: NT2 Analyst: LH Analyzed: 06/01/2022 10:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22E0401-11 C
Preparation Batch: BKF0002 Sample Size: 10 mL
Prepared: 06/01/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	100	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	102	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-4-220524
22E0401-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 10:55

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 18:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKE0704
Prepared: 05/27/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22E0401-11 L 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	0.1	ug/L	J
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-4-220524
22E0401-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 10:55

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 18:33

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	24.1 %	*
<i>Surrogate: Phenol-d5</i>					30-160 %	21.1 %	*
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	44.4 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	26.8 %	*
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	44.1 %	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-4-220524
22E0401-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 10:55

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 18:33

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	70.6	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	84.6	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	116	%	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-4-220524
22E0401-11 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 05/24/2022 10:55

Instrument: NT11 Analyst: VTS

Analyzed: 06/21/2022 17:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-11 F 01
Preparation Batch: BKE0703 Sample Size: 440 mL
Prepared: 05/27/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22E0401-11 F 01
Cleanup Batch: CKF0144 Initial Volume: 0.5 uL
Cleaned: 20-Jun-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.011	0.007	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.011	0.003	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.001	0.011	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.011	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.011	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.011	0.003	ug/L	J
Fluorene	86-73-7	1	0.002	0.011	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.011	0.005	ug/L	J
Anthracene	120-12-7	1	0.001	0.011	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.011	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.011	0.003	ug/L	J
Pyrene	129-00-0	1	0.001	0.011	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0009	0.011	ND	ug/L	U
Chrysene	218-01-9	1	0.001	0.011	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.011	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.004	0.011	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.011	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.011	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.003	0.011	ND	ug/L	U
Perylene	198-55-0	1	0.007	0.011	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.011	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.002	0.011	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.002	0.011	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 82.0 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 114 % Q

Surrogate: Fluoranthene-d10

57-120 % 97.6 %



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MW-4-220524
22E0401-11 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/24/2022 10:55
Instrument: FID4 Analyst: CTO Analyzed: 06/06/2022 23:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-11 H 01
Preparation Batch: BKE0706 Sample Size: 500 mL
Prepared: 05/27/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	95.4	%	



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MW-4-220524
22E0401-11 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 05/24/2022 10:55
Instrument: ECD7 Analyst: JGR Analyzed: 06/20/2022 14:23

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKE0746 Prepared: 05/27/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22E0401-11 M 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKF0154 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-11 M 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKF0152 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-11 M 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKF0153 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-11 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	81.0 %
Surrogate: Tetrachlorometaxylene	32-120 %	60.1 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	91.8 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	56.9 %



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MW-4-220524
22E0401-11 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/24/2022 10:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 21:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-11 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 21:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-11 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	0.396	ug/L	J
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U



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MW-4-220524
22E0401-11 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/24/2022 10:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 21:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-11 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	1.09	ug/L	
Copper	7440-50-8	1	0.173	0.500	0.263	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.315	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 21:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-11 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U



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MW-4-220524
22E0401-11 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/24/2022 10:55
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 12:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-11 N
Preparation Batch: BKF0109 Sample Size: 20 mL
Prepared: 06/06/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000015	mg/L	J



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Project Manager: Zanna Satterwhite

Reported:
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MW-4-220524
22E0401-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B

Sampled: 05/24/2022 10:55

Instrument: ICPMS1 Analyst: MCB

Analyzed: 06/08/2022 23:54

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Extract ID: 22E0401-12 A 02

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	1	0.260	0.500	0.277	ug/L	J
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-4-220524
22E0401-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/24/2022 10:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 23:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-12 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.20	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.300	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.309	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-4-220524
22E0401-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/24/2022 10:55
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 13:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-12 A
Preparation Batch: BKF0139 Sample Size: 20 mL
Prepared: 06/07/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project Manager: Zanna Satterwhite

Reported:
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MW-6-220524
22E0401-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 14:20

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 19:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKE0797
Prepared: 05/31/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22E0401-13 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-6-220524
22E0401-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 14:20

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 19:27

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-6-220524
22E0401-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 14:20

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 19:27

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	117	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	99.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	99.9	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	101	%	



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MW-6-220524
22E0401-13 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/24/2022 14:20
Instrument: NT2 Analyst: LH Analyzed: 06/01/2022 11:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22E0401-13 B
Preparation Batch: BKF0002 Sample Size: 10 mL
Prepared: 06/01/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	103	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-6-220524
22E0401-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 14:20

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 19:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKE0704
Prepared: 05/27/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22E0401-13 L 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-6-220524
22E0401-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 14:20

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 19:09

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	44.8 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	27.8 %	*
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	69.9 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	56.7 %	
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	74.6 %	



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MW-6-220524
22E0401-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/24/2022 14:20
Instrument: NT14 Analyst: VTS Analyzed: 06/09/2022 19:09

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	82.3	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	100	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	123	%	



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MW-6-220524
22E0401-13 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 05/24/2022 14:20

Instrument: NT11 Analyst: VTS

Analyzed: 06/21/2022 17:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-13 F 01
Preparation Batch: BKE0703 Sample Size: 425 mL
Prepared: 05/27/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22E0401-13 F 01
Cleanup Batch: CKF0144 Initial Volume: 0.5 uL
Cleaned: 20-Jun-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.002	0.012	0.008	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.012	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.001	0.012	0.003	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.012	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.012	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.012	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.012	0.002	ug/L	J
Phenanthrene	85-01-8	1	0.002	0.012	0.005	ug/L	J
Anthracene	120-12-7	1	0.001	0.012	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.012	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.012	0.005	ug/L	J
Pyrene	129-00-0	1	0.001	0.012	0.003	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0009	0.012	ND	ug/L	U
Chrysene	218-01-9	1	0.001	0.012	0.001	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.012	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.004	0.012	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.012	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.012	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.003	0.012	ND	ug/L	U
Perylene	198-55-0	1	0.007	0.012	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.012	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.002	0.012	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.002	0.012	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 77.2 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 113 % Q

Surrogate: Fluoranthene-d10

57-120 % 97.0 %



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MW-6-220524
22E0401-13 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/24/2022 14:20
Instrument: FID4 Analyst: CTO Analyzed: 06/06/2022 00:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-13 H 01
Preparation Batch: BKE0706 Sample Size: 415 mL
Prepared: 05/27/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.120	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.241	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	96.6	%	



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MW-6-220524
22E0401-13 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 05/24/2022 14:20
Instrument: ECD7 Analyst: JGR Analyzed: 06/20/2022 14:44

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKE0746 Prepared: 05/27/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22E0401-13 M 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKF0154 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-13 M 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKF0152 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-13 M 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKF0153 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-13 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	79.5 %
Surrogate: Tetrachlorometaxylene	32-120 %	64.3 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	91.8 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	59.8 %



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MW-6-220524
22E0401-13 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/24/2022 14:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 21:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-13 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 21:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-13 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	0.0900	ug/L	J
Chromium	7440-47-3	1	0.260	0.500	0.368	ug/L	J
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U



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MW-6-220524
22E0401-13 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/24/2022 14:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 21:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-13 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	2.50	ug/L	
Copper	7440-50-8	1	0.173	0.500	0.841	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	2.18	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	3.08	ug/L	J

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 21:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-13 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U



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MW-6-220524
22E0401-13 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/24/2022 14:20
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 12:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-13 N
Preparation Batch: BKF0109 Sample Size: 20 mL
Prepared: 06/06/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000015	mg/L	J



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MW-6-220524
22E0401-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 05/24/2022 14:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 23:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-14 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0760	ug/L	J
Chromium, Dissolved	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	0.0520	ug/L	J
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-6-220524
22E0401-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/24/2022 14:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 23:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-14 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	2.61	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.846	ug/L	
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	1.88	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	3.29	ug/L	J



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MW-6-220524
22E0401-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/24/2022 14:20
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 13:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-14 A
Preparation Batch: BKF0139 Sample Size: 20 mL
Prepared: 06/07/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project Manager: Zanna Satterwhite

Reported:
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MW-7-220524
22E0401-15 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 13:15

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 19:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKE0797
Prepared: 05/31/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22E0401-15 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

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MW-7-220524
22E0401-15 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 13:15

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 19:48

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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MW-7-220524
22E0401-15 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 13:15

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 19:48

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	111	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	97.2	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	97.8	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	101	%	



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MW-7-220524
22E0401-15 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/24/2022 13:15
Instrument: NT2 Analyst: LH Analyzed: 06/01/2022 11:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22E0401-15 C
Preparation Batch: BKF0002 Sample Size: 10 mL
Prepared: 06/01/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.0	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	101	%	



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Project Manager: Zanna Satterwhite

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MW-7-220524
22E0401-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 13:15

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 19:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKE0704
Prepared: 05/27/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22E0401-15 L 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
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Project Manager: Zanna Satterwhite

Reported:
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MW-7-220524
22E0401-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 13:15

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 19:46

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>52.1 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>31.0 %</i>	
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>83.0 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>69.5 %</i>	
<i>Surrogate: Nitrobenzene-d5</i>					<i>30-160 %</i>	<i>88.1 %</i>	



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MW-7-220524
22E0401-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 13:15

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 19:46

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	96.0	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	100	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	127	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-7-220524
22E0401-15 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/24/2022 13:15
Instrument: NT11 Analyst: VTS Analyzed: 06/21/2022 18:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-15 F 01
Preparation Batch: BKE0703 Sample Size: 500 mL
Prepared: 05/27/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22E0401-15 F 01
Cleanup Batch: CKF0144 Initial Volume: 0.5 uL
Cleaned: 20-Jun-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.009	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.005	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.003	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.003	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 81.6 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 118 % Q

Surrogate: Fluoranthene-d10

57-120 % 95.6 %



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MW-7-220524
22E0401-15 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/24/2022 13:15
Instrument: FID4 Analyst: CTO Analyzed: 06/07/2022 00:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-15 H 01
Preparation Batch: BKE0706 Sample Size: 445 mL
Prepared: 05/27/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.112	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.225	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	96.9	%	



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MW-7-220524
22E0401-15 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 05/24/2022 13:15
Instrument: ECD7 Analyst: JGR Analyzed: 06/20/2022 15:06

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKE0746 Prepared: 05/27/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22E0401-15 M 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKF0154 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-15 M 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKF0152 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-15 M 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKF0153 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-15 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	82.9 %
Surrogate: Tetrachlorometaxylene	32-120 %	68.2 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	93.6 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	62.7 %



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MW-7-220524
22E0401-15 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/24/2022 13:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 20:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-15 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 21:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-15 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	0.125	ug/L	J
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U



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MW-7-220524
22E0401-15 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/24/2022 13:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 20:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-15 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	0.608	ug/L	
Copper	7440-50-8	1	0.173	0.500	2.34	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	2.86	ug/L	
Selenium	7782-49-2	1	0.179	0.500	0.235	ug/L	J
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 21:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-15 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U



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MW-7-220524
22E0401-15 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/24/2022 13:15
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 12:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-15 N
Preparation Batch: BKF0109 Sample Size: 20 mL
Prepared: 06/06/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000021	mg/L	J



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MW-7-220524
22E0401-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 05/24/2022 13:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 21:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-16 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.143	ug/L	J
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	0.0520	ug/L	J
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-7-220524
22E0401-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/24/2022 13:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 21:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-16 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.615	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	0.0320	ug/L	J
Copper, Dissolved	7440-50-8	1	0.173	0.500	2.36	ug/L	
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	2.82	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-7-220524
22E0401-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/24/2022 13:15
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 13:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-16 A
Preparation Batch: BKF0139 Sample Size: 20 mL
Prepared: 06/07/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-8-220524
22E0401-17 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 16:20

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 20:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKE0797
Prepared: 05/31/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22E0401-17 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-8-220524
22E0401-17 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 16:20

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 20:09

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-8-220524
22E0401-17 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 16:20

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 20:09

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	108	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	99.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	102	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	103	%	



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MW-8-220524
22E0401-17 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/24/2022 16:20
Instrument: NT2 Analyst: LH Analyzed: 06/01/2022 12:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22E0401-17 C
Preparation Batch: BKF0002 Sample Size: 10 mL
Prepared: 06/01/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.2	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	102	%	



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

MW-8-220524
22E0401-17 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 16:20

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 20:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKE0704
Prepared: 05/27/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22E0401-17 L 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-8-220524
22E0401-17 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/24/2022 16:20

Instrument: NT14 Analyst: VTS

Analyzed: 06/09/2022 20:23

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	27.2 %	*
<i>Surrogate: Phenol-d5</i>					30-160 %	18.1 %	*
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	43.5 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	34.7 %	
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	44.7 %	



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MW-8-220524
22E0401-17 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/24/2022 16:20
Instrument: NT14 Analyst: VTS Analyzed: 06/09/2022 20:23

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	56.3	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	72.6	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	94.8	%	



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Project Manager: Zanna Satterwhite

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MW-8-220524
22E0401-17 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 05/24/2022 16:20
Instrument: NT11 Analyst: VTS Analyzed: 06/21/2022 18:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-17 F 01
Preparation Batch: BKE0703 Sample Size: 465 mL
Prepared: 05/27/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22E0401-17 F 01
Cleanup Batch: CKF0144 Initial Volume: 0.5 uL
Cleaned: 20-Jun-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.011	0.006	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.011	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.001	0.011	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.011	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.011	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.011	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.011	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.011	0.005	ug/L	J
Anthracene	120-12-7	1	0.001	0.011	0.002	ug/L	J
Carbazole	86-74-8	1	0.001	0.011	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.011	0.002	ug/L	J
Pyrene	129-00-0	1	0.001	0.011	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.011	ND	ug/L	U
Chrysene	218-01-9	1	0.001	0.011	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.011	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.011	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.011	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.011	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.003	0.011	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.011	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.011	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.011	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.002	0.011	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 67.1 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 114 % Q
Surrogate: Fluoranthene-d10 57-120 % 94.2 %



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MW-8-220524
22E0401-17 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/24/2022 16:20
Instrument: FID4 Analyst: CTO Analyzed: 06/07/2022 00:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22E0401-17 H 01
Preparation Batch: BKE0706 Sample Size: 425 mL
Prepared: 05/27/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.118	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.235	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	95.3	%	



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MW-8-220524
22E0401-17 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 05/24/2022 16:20
Instrument: ECD7 Analyst: JGR Analyzed: 06/20/2022 15:28

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKE0746 Prepared: 05/27/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22E0401-17 M 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKF0154 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-17 M 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKF0152 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-17 M 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKF0153 Cleaned: 18-Jun-2022	Initial Volume: 500 uL Final Volume: 500 uL	Extract ID: 22E0401-17 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	82.0 %
Surrogate: Tetrachlorometaxylene	32-120 %	67.4 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	92.5 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	62.8 %



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MW-8-220524
22E0401-17 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/24/2022 16:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 22:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-17 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 21:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-17 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	0.666	ug/L	
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U



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MW-8-220524
22E0401-17 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/24/2022 16:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/08/2022 22:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-17 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Arsenic	7440-38-2	1	0.0373	0.200	3.52	ug/L	
Copper	7440-50-8	1	0.173	0.500	0.314	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	1.06	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	7.28	ug/L	

Instrument: ICPMS2 Analyst: MCB Analyzed: 06/07/2022 21:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-17 N 02
Preparation Batch: BKF0141 Sample Size: 25 mL
Prepared: 06/07/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U



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MW-8-220524
22E0401-17 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/24/2022 16:20
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 12:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-17 N
Preparation Batch: BKF0109 Sample Size: 20 mL
Prepared: 06/06/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000015	mg/L	J



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MW-8-220524
22E0401-18 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 05/24/2022 16:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/09/2022 00:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-18 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-8-220524
22E0401-18 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/24/2022 16:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 06/09/2022 00:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN EPA 600/4-79-020 4.1.4 HNO3 matrix Extract ID: 22E0401-18 A 02
Preparation Batch: BKF0196 Sample Size: 25 mL
Prepared: 06/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	2.37	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.187	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.978	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	5.55	ug/L	J



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MW-8-220524
22E0401-18 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/24/2022 16:20
Instrument: HYDRA Analyst: ML Analyzed: 06/08/2022 13:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22E0401-18 A
Preparation Batch: BKF0139 Sample Size: 20 mL
Prepared: 06/07/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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Trip blank (Cooler 1)
22E0401-19 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 00:00

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 16:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKE0797
Prepared: 05/31/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22E0401-19 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Trip blank (Cooler 1)
22E0401-19 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 00:00

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 16:16

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Trip blank (Cooler 1)
22E0401-19 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/24/2022 00:00

Instrument: NT2 Analyst: PKC

Analyzed: 05/31/2022 16:16

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	107	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	99.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	98.5	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	102	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 22-Jun-2022 18:27
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Trip blank (Cooler 2)
22E0401-20 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/24/2022 00:00
Instrument: NT2 Analyst: PKC Analyzed: 05/31/2022 16:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22E0401-20 A
Preparation Batch: BKE0797 Sample Size: 10 mL
Prepared: 05/31/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	101	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0797 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0797-BLK1)		Prepared: 31-May-2022 Analyzed: 31-May-2022 15:55								
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.98		ug/L	5.00		99.5	80-120			
Surrogate: 4-Bromofluorobenzene	4.99		ug/L	5.00		99.7	80-120			
Blank (BKE0797-BLK2)		Prepared: 31-May-2022 Analyzed: 31-May-2022 15:55								
Chloromethane	ND	0.27	0.50	ug/L						U
Vinyl Chloride	ND	0.08	0.20	ug/L						U
Bromomethane	ND	0.74	1.00	ug/L						U
Chloroethane	ND	0.18	0.20	ug/L						U
Trichlorofluoromethane	ND	0.13	0.20	ug/L						U
Acrolein	ND	2.70	5.00	ug/L						U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.11	0.20	ug/L						U
Acetone	ND	4.33	5.00	ug/L						U
1,1-Dichloroethene	ND	0.08	0.20	ug/L						U
Iodomethane	ND	0.43	1.00	ug/L						U
Methylene Chloride	ND	0.53	1.00	ug/L						U
Acrylonitrile	ND	0.40	1.00	ug/L						U
Carbon Disulfide	ND	0.12	0.20	ug/L						U
trans-1,2-Dichloroethene	ND	0.07	0.20	ug/L						U
Vinyl Acetate	ND	0.12	0.20	ug/L						U
1,1-Dichloroethane	ND	0.09	0.20	ug/L						U
2-Butanone	ND	1.77	5.00	ug/L						U
2,2-Dichloropropane	ND	0.11	0.20	ug/L						U
cis-1,2-Dichloroethene	ND	0.08	0.20	ug/L						U
Chloroform	ND	0.05	0.20	ug/L						U
Bromochloromethane	ND	0.09	0.20	ug/L						U
1,1,1-Trichloroethane	ND	0.08	0.20	ug/L						U
1,1-Dichloropropene	ND	0.09	0.20	ug/L						U
Carbon tetrachloride	ND	0.09	0.20	ug/L						U
1,2-Dichloroethane	ND	0.08	0.20	ug/L						U
Benzene	ND	0.05	0.20	ug/L						U
Trichloroethene	ND	0.07	0.20	ug/L						U
1,2-Dichloropropane	ND	0.07	0.20	ug/L						U
Bromodichloromethane	ND	0.09	0.20	ug/L						U
Dibromomethane	ND	0.06	0.20	ug/L						U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0797 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0797-BLK2)						Prepared: 31-May-2022 Analyzed: 31-May-2022 15:55					
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	1.90	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U
Toluene	ND	0.05	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U
2-Hexanone	ND	2.06	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.10	0.20	ug/L							U
1,3-Dichloropropane	ND	0.07	0.20	ug/L							U
Tetrachloroethene	ND	0.09	0.20	ug/L							U
Dibromochloromethane	ND	0.09	0.20	ug/L							U
1,2-Dibromoethane	ND	0.09	0.20	ug/L							U
Chlorobenzene	ND	0.06	0.20	ug/L							U
Ethylbenzene	ND	0.05	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.09	0.20	ug/L							U
m,p-Xylene	ND	0.14	0.40	ug/L							U
o-Xylene	ND	0.08	0.20	ug/L							U
Xylenes, total	ND	0.22	0.60	ug/L							U
Styrene	ND	0.09	0.20	ug/L							U
Bromoform	ND	0.15	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.10	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.16	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	0.60	1.00	ug/L							U
n-Propylbenzene	ND	0.07	0.20	ug/L							U
Bromobenzene	ND	0.07	0.20	ug/L							U
Isopropyl Benzene	ND	0.07	0.20	ug/L							U
2-Chlorotoluene	ND	0.06	0.20	ug/L							U
4-Chlorotoluene	ND	0.06	0.20	ug/L							U
t-Butylbenzene	ND	0.07	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.07	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.10	0.20	ug/L							U
s-Butylbenzene	ND	0.06	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.08	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.10	0.20	ug/L							U
n-Butylbenzene	ND	0.18	0.20	ug/L							U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0797 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0797-BLK2)											
						Prepared: 31-May-2022 Analyzed: 31-May-2022 15:55					
1,2-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.39	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.21	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	1.00	2.00	ug/L							U
Naphthalene	ND	0.27	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.25	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.13	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.14	0.50	ug/L							U
2-Pentanone	ND	2.34	5.00	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.37			ug/L	5.00		107	80-129			
<i>Surrogate: Toluene-d8</i>	4.98			ug/L	5.00		99.5	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.99			ug/L	5.00		99.7	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.09			ug/L	5.00		102	80-120			
LCS (BKE0797-BS1)											
						Prepared: 31-May-2022 Analyzed: 31-May-2022 13:48					
Gasoline Range Organics (Tol-Nap)	856		100	ug/L	1000		85.6	72-128			
<i>Surrogate: Toluene-d8</i>	5.08			ug/L	5.00		102	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.10			ug/L	5.00		102	80-120			
LCS (BKE0797-BS2)											
						Prepared: 31-May-2022 Analyzed: 31-May-2022 14:09					
Chloromethane	8.50	0.27	0.50	ug/L	10.0		85.0	60-138			
Vinyl Chloride	10.1	0.08	0.20	ug/L	10.0		101	66-133			
Bromomethane	9.52	0.74	1.00	ug/L	10.0		95.2	72-131			
Chloroethane	9.81	0.18	0.20	ug/L	10.0		98.1	60-155			
Trichlorofluoromethane	8.56	0.13	0.20	ug/L	10.0		85.6	62-141			
Acrolein	44.3	2.70	5.00	ug/L	50.0		88.6	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.92	0.11	0.20	ug/L	10.0		99.2	76-129			
Acetone	51.7	4.33	5.00	ug/L	50.0		103	58-142			
1,1-Dichloroethene	10.3	0.08	0.20	ug/L	10.0		103	69-135			
Iodomethane	9.57	0.43	1.00	ug/L	10.0		95.7	56-147			
Methylene Chloride	9.34	0.53	1.00	ug/L	10.0		93.4	65-135			
Acrylonitrile	9.55	0.40	1.00	ug/L	10.0		95.5	64-134			
Carbon Disulfide	9.97	0.12	0.20	ug/L	10.0		99.7	78-125			
trans-1,2-Dichloroethene	9.43	0.07	0.20	ug/L	10.0		94.3	78-128			



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0797 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKE0797-BS2)						Prepared: 31-May-2022 Analyzed: 31-May-2022 14:09					
Vinyl Acetate	9.60	0.12	0.20	ug/L	10.0		96.0	55-138			
1,1-Dichloroethane	9.10	0.09	0.20	ug/L	10.0		91.0	76-124			
2-Butanone	51.4	1.77	5.00	ug/L	50.0		103	61-140			
2,2-Dichloropropane	9.95	0.11	0.20	ug/L	10.0		99.5	66-147			
cis-1,2-Dichloroethene	8.88	0.08	0.20	ug/L	10.0		88.8	80-121			
Chloroform	9.41	0.05	0.20	ug/L	10.0		94.1	80-122			
Bromochloromethane	9.02	0.09	0.20	ug/L	10.0		90.2	80-121			
1,1,1-Trichloroethane	9.37	0.08	0.20	ug/L	10.0		93.7	79-123			
1,1-Dichloropropene	9.50	0.09	0.20	ug/L	10.0		95.0	80-127			
Carbon tetrachloride	9.59	0.09	0.20	ug/L	10.0		95.9	53-137			
1,2-Dichloroethane	9.72	0.08	0.20	ug/L	10.0		97.2	75-123			
Benzene	9.31	0.05	0.20	ug/L	10.0		93.1	80-120			
Trichloroethene	9.26	0.07	0.20	ug/L	10.0		92.6	80-120			
1,2-Dichloropropane	9.28	0.07	0.20	ug/L	10.0		92.8	80-120			
Bromodichloromethane	9.83	0.09	0.20	ug/L	10.0		98.3	80-121			
Dibromomethane	9.71	0.06	0.20	ug/L	10.0		97.1	80-120			
2-Chloroethyl vinyl ether	8.33	0.55	1.00	ug/L	10.0		83.3	64-120			
4-Methyl-2-Pentanone	50.6	1.90	5.00	ug/L	50.0		101	67-133			
cis-1,3-Dichloropropene	9.92	0.09	0.20	ug/L	10.0		99.2	80-124			
Toluene	9.24	0.05	0.20	ug/L	10.0		92.4	80-120			
trans-1,3-Dichloropropene	10.5	0.09	0.20	ug/L	10.0		105	71-127			
2-Hexanone	56.0	2.06	5.00	ug/L	50.0		112	69-133			
1,1,2-Trichloroethane	9.61	0.10	0.20	ug/L	10.0		96.1	80-121			
1,3-Dichloropropane	9.73	0.07	0.20	ug/L	10.0		97.3	80-120			
Tetrachloroethene	9.00	0.09	0.20	ug/L	10.0		90.0	80-120			
Dibromochloromethane	8.21	0.09	0.20	ug/L	10.0		82.1	65-135			
1,2-Dibromoethane	9.57	0.09	0.20	ug/L	10.0		95.7	80-121			
Chlorobenzene	9.12	0.06	0.20	ug/L	10.0		91.2	80-120			
Ethylbenzene	9.10	0.05	0.20	ug/L	10.0		91.0	80-120			
1,1,1,2-Tetrachloroethane	9.55	0.09	0.20	ug/L	10.0		95.5	80-120			
m,p-Xylene	18.8	0.14	0.40	ug/L	20.0		93.8	80-121			
o-Xylene	9.11	0.08	0.20	ug/L	10.0		91.1	80-121			
Xylenes, total	27.9	0.22	0.60	ug/L	30.0		92.9	76-127			
Styrene	8.86	0.09	0.20	ug/L	10.0		88.6	80-124			
Bromoform	7.49	0.15	0.20	ug/L	10.0		74.9	51-134			Q



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0797 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKE0797-BS2)						Prepared: 31-May-2022 Analyzed: 31-May-2022 14:09					
1,1,2,2-Tetrachloroethane	9.95	0.10	0.20	ug/L	10.0		99.5	77-123			
1,2,3-Trichloropropane	9.46	0.16	0.50	ug/L	10.0		94.6	76-125			
trans-1,4-Dichloro 2-Butene	10.2	0.60	1.00	ug/L	10.0		102	55-129			
n-Propylbenzene	10.2	0.07	0.20	ug/L	10.0		102	78-130			
Bromobenzene	9.21	0.07	0.20	ug/L	10.0		92.1	80-120			
Isopropyl Benzene	9.91	0.07	0.20	ug/L	10.0		99.1	80-128			
2-Chlorotoluene	9.12	0.06	0.20	ug/L	10.0		91.2	78-122			
4-Chlorotoluene	9.39	0.06	0.20	ug/L	10.0		93.9	80-121			
t-Butylbenzene	9.73	0.07	0.20	ug/L	10.0		97.3	78-125			
1,3,5-Trimethylbenzene	9.70	0.07	0.20	ug/L	10.0		97.0	80-129			
1,2,4-Trimethylbenzene	9.99	0.10	0.20	ug/L	10.0		99.9	80-127			
s-Butylbenzene	9.67	0.06	0.20	ug/L	10.0		96.7	78-129			
4-Isopropyl Toluene	9.94	0.08	0.20	ug/L	10.0		99.4	79-130			
1,3-Dichlorobenzene	9.51	0.08	0.20	ug/L	10.0		95.1	80-120			
1,4-Dichlorobenzene	9.07	0.10	0.20	ug/L	10.0		90.7	80-120			
n-Butylbenzene	10.5	0.18	0.20	ug/L	10.0		105	74-129			
1,2-Dichlorobenzene	9.13	0.08	0.20	ug/L	10.0		91.3	80-120			
1,2-Dibromo-3-chloropropane	9.89	0.39	0.50	ug/L	10.0		98.9	62-123			
1,2,4-Trichlorobenzene	8.97	0.21	0.50	ug/L	10.0		89.7	64-124			
Hexachloro-1,3-Butadiene	9.92	1.00	2.00	ug/L	10.0		99.2	58-123			
Naphthalene	9.55	0.27	0.50	ug/L	10.0		95.5	50-134			
1,2,3-Trichlorobenzene	9.24	0.25	0.50	ug/L	10.0		92.4	49-133			
Dichlorodifluoromethane	10.4	0.13	0.20	ug/L	10.0		104	48-147			
Methyl tert-butyl Ether	10.2	0.14	0.50	ug/L	10.0		102	71-132			
2-Pentanone	43.3	2.34	5.00	ug/L	50.0		86.6	69-134			
Surrogate: 1,2-Dichloroethane-d4	5.25			ug/L	5.00		105	80-129			
Surrogate: Toluene-d8	5.08			ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	5.11			ug/L	5.00		102	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.09			ug/L	5.00		102	80-120			
LCS Dup (BKE0797-BSD1)						Prepared: 31-May-2022 Analyzed: 31-May-2022 14:30					
Gasoline Range Organics (Tol-Nap)	818		100	ug/L	1000		81.8	72-128	4.49	30	
Surrogate: Toluene-d8	5.27			ug/L	5.00		105	80-120			
Surrogate: 4-Bromofluorobenzene	5.08			ug/L	5.00		102	80-120			



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Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0797 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKE0797-BSD2)						Prepared: 31-May-2022 Analyzed: 31-May-2022 14:51					
Chloromethane	8.79	0.27	0.50	ug/L	10.0		87.9	60-138	3.34	30	
Vinyl Chloride	9.74	0.08	0.20	ug/L	10.0		97.4	66-133	3.17	30	
Bromomethane	9.64	0.74	1.00	ug/L	10.0		96.4	72-131	1.23	30	
Chloroethane	9.69	0.18	0.20	ug/L	10.0		96.9	60-155	1.28	30	
Trichlorofluoromethane	8.60	0.13	0.20	ug/L	10.0		86.0	62-141	0.46	30	
Acrolein	44.4	2.70	5.00	ug/L	50.0		88.8	52-190	0.20	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.50	0.11	0.20	ug/L	10.0		95.0	76-129	4.25	30	
Acetone	51.6	4.33	5.00	ug/L	50.0		103	58-142	0.16	30	
1,1-Dichloroethene	10.2	0.08	0.20	ug/L	10.0		102	69-135	1.01	30	
Iodomethane	8.99	0.43	1.00	ug/L	10.0		89.9	56-147	6.20	30	
Methylene Chloride	9.43	0.53	1.00	ug/L	10.0		94.3	65-135	1.01	30	
Acrylonitrile	9.67	0.40	1.00	ug/L	10.0		96.7	64-134	1.27	30	
Carbon Disulfide	9.60	0.12	0.20	ug/L	10.0		96.0	78-125	3.82	30	
trans-1,2-Dichloroethene	9.44	0.07	0.20	ug/L	10.0		94.4	78-128	0.03	30	
Vinyl Acetate	10.0	0.12	0.20	ug/L	10.0		100	55-138	4.06	30	
1,1-Dichloroethane	9.44	0.09	0.20	ug/L	10.0		94.4	76-124	3.67	30	
2-Butanone	55.0	1.77	5.00	ug/L	50.0		110	61-140	6.59	30	
2,2-Dichloropropane	9.91	0.11	0.20	ug/L	10.0		99.1	66-147	0.39	30	
cis-1,2-Dichloroethene	9.21	0.08	0.20	ug/L	10.0		92.1	80-121	3.63	30	
Chloroform	9.57	0.05	0.20	ug/L	10.0		95.7	80-122	1.74	30	
Bromochloromethane	9.43	0.09	0.20	ug/L	10.0		94.3	80-121	4.45	30	
1,1,1-Trichloroethane	9.48	0.08	0.20	ug/L	10.0		94.8	79-123	1.14	30	
1,1-Dichloropropene	9.85	0.09	0.20	ug/L	10.0		98.5	80-127	3.55	30	
Carbon tetrachloride	9.67	0.09	0.20	ug/L	10.0		96.7	53-137	0.87	30	
1,2-Dichloroethane	10.2	0.08	0.20	ug/L	10.0		102	75-123	4.64	30	
Benzene	9.62	0.05	0.20	ug/L	10.0		96.2	80-120	3.24	30	
Trichloroethene	9.51	0.07	0.20	ug/L	10.0		95.1	80-120	2.60	30	
1,2-Dichloropropane	9.72	0.07	0.20	ug/L	10.0		97.2	80-120	4.60	30	
Bromodichloromethane	10.2	0.09	0.20	ug/L	10.0		102	80-121	3.20	30	
Dibromomethane	9.74	0.06	0.20	ug/L	10.0		97.4	80-120	0.32	30	
2-Chloroethyl vinyl ether	8.65	0.55	1.00	ug/L	10.0		86.5	64-120	3.77	30	
4-Methyl-2-Pentanone	52.7	1.90	5.00	ug/L	50.0		105	67-133	4.20	30	
cis-1,3-Dichloropropene	10.5	0.09	0.20	ug/L	10.0		105	80-124	5.34	30	
Toluene	9.58	0.05	0.20	ug/L	10.0		95.8	80-120	3.67	30	
trans-1,3-Dichloropropene	10.9	0.09	0.20	ug/L	10.0		109	71-127	4.22	30	



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0797 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKE0797-BSD2)						Prepared: 31-May-2022 Analyzed: 31-May-2022 14:51					
2-Hexanone	61.3	2.06	5.00	ug/L	50.0	123	69-133	9.03	30		
1,1,2-Trichloroethane	9.92	0.10	0.20	ug/L	10.0	99.2	80-121	3.18	30		
1,3-Dichloropropane	10.4	0.07	0.20	ug/L	10.0	104	80-120	6.28	30		
Tetrachloroethene	9.18	0.09	0.20	ug/L	10.0	91.8	80-120	1.99	30		
Dibromochloromethane	8.59	0.09	0.20	ug/L	10.0	85.9	65-135	4.61	30		
1,2-Dibromoethane	10.1	0.09	0.20	ug/L	10.0	101	80-121	5.45	30		
Chlorobenzene	9.70	0.06	0.20	ug/L	10.0	97.0	80-120	6.23	30		
Ethylbenzene	9.59	0.05	0.20	ug/L	10.0	95.9	80-120	5.20	30		
1,1,1,2-Tetrachloroethane	9.90	0.09	0.20	ug/L	10.0	99.0	80-120	3.64	30		
m,p-Xylene	19.9	0.14	0.40	ug/L	20.0	99.5	80-121	5.93	30		
o-Xylene	9.72	0.08	0.20	ug/L	10.0	97.2	80-121	6.46	30		
Xylenes, total	29.6	0.22	0.60	ug/L	30.0	98.8	76-127	6.10	30		
Styrene	10.3	0.09	0.20	ug/L	10.0	103	80-124	15.30	30		
Bromoform	7.93	0.15	0.20	ug/L	10.0	79.3	51-134	5.68	30	Q	
1,1,2,2-Tetrachloroethane	10.2	0.10	0.20	ug/L	10.0	102	77-123	2.80	30		
1,2,3-Trichloropropane	9.50	0.16	0.50	ug/L	10.0	95.0	76-125	0.40	30		
trans-1,4-Dichloro 2-Butene	10.8	0.60	1.00	ug/L	10.0	108	55-129	6.28	30		
n-Propylbenzene	10.6	0.07	0.20	ug/L	10.0	106	78-130	3.72	30		
Bromobenzene	9.57	0.07	0.20	ug/L	10.0	95.7	80-120	3.87	30		
Isopropyl Benzene	10.2	0.07	0.20	ug/L	10.0	102	80-128	2.65	30		
2-Chlorotoluene	9.46	0.06	0.20	ug/L	10.0	94.6	78-122	3.73	30		
4-Chlorotoluene	9.76	0.06	0.20	ug/L	10.0	97.6	80-121	3.81	30		
t-Butylbenzene	9.95	0.07	0.20	ug/L	10.0	99.5	78-125	2.30	30		
1,3,5-Trimethylbenzene	10.2	0.07	0.20	ug/L	10.0	102	80-129	4.60	30		
1,2,4-Trimethylbenzene	10.1	0.10	0.20	ug/L	10.0	101	80-127	1.48	30		
s-Butylbenzene	10.1	0.06	0.20	ug/L	10.0	101	78-129	3.90	30		
4-Isopropyl Toluene	10.2	0.08	0.20	ug/L	10.0	102	79-130	2.65	30		
1,3-Dichlorobenzene	9.77	0.08	0.20	ug/L	10.0	97.7	80-120	2.68	30		
1,4-Dichlorobenzene	9.34	0.10	0.20	ug/L	10.0	93.4	80-120	3.00	30		
n-Butylbenzene	10.6	0.18	0.20	ug/L	10.0	106	74-129	1.26	30		
1,2-Dichlorobenzene	9.43	0.08	0.20	ug/L	10.0	94.3	80-120	3.25	30		
1,2-Dibromo-3-chloropropane	10.1	0.39	0.50	ug/L	10.0	101	62-123	2.40	30		
1,2,4-Trichlorobenzene	9.16	0.21	0.50	ug/L	10.0	91.6	64-124	2.08	30		
Hexachloro-1,3-Butadiene	9.53	1.00	2.00	ug/L	10.0	95.3	58-123	3.93	30		
Naphthalene	10.0	0.27	0.50	ug/L	10.0	100	50-134	4.75	30		



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0797 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKE0797-BSD2)					Prepared: 31-May-2022 Analyzed: 31-May-2022 14:51						
1,2,3-Trichlorobenzene	9.49	0.25	0.50	ug/L	10.0		94.9	49-133	2.69	30	
Dichlorodifluoromethane	10.2	0.13	0.20	ug/L	10.0		102	48-147	1.71	30	
Methyl tert-butyl Ether	10.2	0.14	0.50	ug/L	10.0		102	71-132	0.49	30	
2-Pentanone	45.7	2.34	5.00	ug/L	50.0		91.4	69-134	5.38	30	
Surrogate: 1,2-Dichloroethane-d4	5.34			ug/L	5.00		107	80-129			
Surrogate: Toluene-d8	5.11			ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	5.11			ug/L	5.00		102	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.07			ug/L	5.00		101	80-120			
Matrix Spike (BKE0797-MS1)					Source: 22E0401-03 Prepared: 31-May-2022 Analyzed: 31-May-2022 23:17						
Chloromethane	9.65	0.27	0.50	ug/L	10.0	ND	96.5	60-138			
Vinyl Chloride	10.8	0.08	0.20	ug/L	10.0	ND	108	66-133			
Bromomethane	10.5	0.74	1.00	ug/L	10.0	ND	105	72-131			
Chloroethane	11.8	0.18	0.20	ug/L	10.0	ND	118	60-155			
Trichlorofluoromethane	10.2	0.13	0.20	ug/L	10.0	ND	102	62-141			
Acrolein	48.4	2.70	5.00	ug/L	50.0	ND	96.8	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.3	0.11	0.20	ug/L	10.0	ND	103	76-129			
Acetone	63.4	4.33	5.00	ug/L	50.0	ND	127	58-142			
1,1-Dichloroethene	11.9	0.08	0.20	ug/L	10.0	ND	119	69-135			
Iodomethane	10.0	0.43	1.00	ug/L	10.0	ND	100	56-147			
Methylene Chloride	11.1	0.53	1.00	ug/L	10.0	ND	111	65-135			
Acrylonitrile	9.63	0.40	1.00	ug/L	10.0	ND	96.3	64-134			
Carbon Disulfide	11.0	0.12	0.20	ug/L	10.0	ND	110	78-125			
trans-1,2-Dichloroethene	10.6	0.07	0.20	ug/L	10.0	ND	106	78-128			
Vinyl Acetate	7.19	0.12	0.20	ug/L	10.0	ND	71.9	55-138			
1,1-Dichloroethane	9.74	0.09	0.20	ug/L	10.0	ND	97.4	76-124			
2-Butanone	58.3	1.77	5.00	ug/L	50.0	ND	117	61-140			
2,2-Dichloropropane	7.91	0.11	0.20	ug/L	10.0	ND	79.1	66-147			
cis-1,2-Dichloroethene	9.76	0.08	0.20	ug/L	10.0	ND	97.6	80-121			
Chloroform	9.97	0.05	0.20	ug/L	10.0	ND	99.7	80-122			
Bromochloromethane	9.89	0.09	0.20	ug/L	10.0	ND	98.9	80-121			
1,1,1-Trichloroethane	9.88	0.08	0.20	ug/L	10.0	ND	98.8	79-123			
1,1-Dichloropropene	9.64	0.09	0.20	ug/L	10.0	ND	96.4	80-127			
Carbon tetrachloride	9.11	0.09	0.20	ug/L	10.0	ND	91.1	53-137			
1,2-Dichloroethane	10.7	0.08	0.20	ug/L	10.0	ND	107	75-123			



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0797 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKE0797-MS1)											
	Source: 22E0401-03				Prepared: 31-May-2022		Analyzed: 31-May-2022 23:17				
Benzene	9.90	0.05	0.20	ug/L	10.0	ND	99.0	80-120			
Trichloroethene	9.72	0.07	0.20	ug/L	10.0	ND	97.2	80-120			
1,2-Dichloropropane	9.82	0.07	0.20	ug/L	10.0	ND	98.2	80-120			
Bromodichloromethane	9.99	0.09	0.20	ug/L	10.0	ND	99.9	80-121			
Dibromomethane	10.1	0.06	0.20	ug/L	10.0	ND	101	80-120			
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L	10.0	ND		64-120			*, U
4-Methyl-2-Pentanone	58.2	1.90	5.00	ug/L	50.0	ND	116	67-133			
cis-1,3-Dichloropropene	9.79	0.09	0.20	ug/L	10.0	ND	97.9	80-124			
Toluene	10.1	0.05	0.20	ug/L	10.0	ND	101	80-120			
trans-1,3-Dichloropropene	10.5	0.09	0.20	ug/L	10.0	ND	105	71-127			
2-Hexanone	63.0	2.06	5.00	ug/L	50.0	ND	126	69-133			
1,1,2-Trichloroethane	10.1	0.10	0.20	ug/L	10.0	ND	101	80-121			
1,3-Dichloropropane	9.91	0.07	0.20	ug/L	10.0	ND	99.1	80-120			
Tetrachloroethene	9.33	0.09	0.20	ug/L	10.0	ND	93.3	80-120			
Dibromochloromethane	8.03	0.09	0.20	ug/L	10.0	ND	80.3	65-135			Q
1,2-Dibromoethane	10.2	0.09	0.20	ug/L	10.0	ND	102	80-121			
Chlorobenzene	9.89	0.06	0.20	ug/L	10.0	ND	98.9	80-120			
Ethylbenzene	9.75	0.05	0.20	ug/L	10.0	ND	97.5	80-120			
1,1,1,2-Tetrachloroethane	9.80	0.09	0.20	ug/L	10.0	ND	98.0	80-120			
m,p-Xylene	20.4	0.14	0.40	ug/L	20.0	ND	102	80-121			
o-Xylene	9.74	0.08	0.20	ug/L	10.0	ND	97.4	80-121			
Xylenes, total	30.1	0.22	0.60	ug/L	30.0	ND	100	76-127			
Styrene	10.7	0.09	0.20	ug/L	10.0	ND	107	80-124			
Bromoform	6.51	0.15	0.20	ug/L	10.0	ND	65.1	51-134			
1,1,2,2-Tetrachloroethane	10.1	0.10	0.20	ug/L	10.0	ND	101	77-123			
1,2,3-Trichloropropane	9.44	0.16	0.50	ug/L	10.0	ND	94.4	76-125			
trans-1,4-Dichloro 2-Butene	9.06	0.60	1.00	ug/L	10.0	ND	90.6	55-129			
n-Propylbenzene	10.1	0.07	0.20	ug/L	10.0	ND	101	78-130			
Bromobenzene	9.33	0.07	0.20	ug/L	10.0	ND	93.3	80-120			
Isopropyl Benzene	9.79	0.07	0.20	ug/L	10.0	ND	97.9	80-128			
2-Chlorotoluene	9.01	0.06	0.20	ug/L	10.0	ND	90.1	78-122			
4-Chlorotoluene	9.13	0.06	0.20	ug/L	10.0	ND	91.3	80-121			
t-Butylbenzene	9.60	0.07	0.20	ug/L	10.0	ND	96.0	78-125			
1,3,5-Trimethylbenzene	9.73	0.07	0.20	ug/L	10.0	ND	97.3	80-129			
1,2,4-Trimethylbenzene	9.83	0.10	0.20	ug/L	10.0	ND	98.3	80-127			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0797 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKE0797-MS1)											
Source: 22E0401-03			Prepared: 31-May-2022			Analyzed: 31-May-2022 23:17					
s-Butylbenzene	9.57	0.06	0.20	ug/L	10.0	ND	95.7	78-129			
4-Isopropyl Toluene	9.50	0.08	0.20	ug/L	10.0	ND	95.0	79-130			
1,3-Dichlorobenzene	9.58	0.08	0.20	ug/L	10.0	ND	95.8	80-120			
1,4-Dichlorobenzene	9.18	0.10	0.20	ug/L	10.0	ND	91.8	80-120			
n-Butylbenzene	9.80	0.18	0.20	ug/L	10.0	ND	98.0	74-129			
1,2-Dichlorobenzene	9.29	0.08	0.20	ug/L	10.0	ND	92.9	80-120			
1,2-Dibromo-3-chloropropane	8.63	0.39	0.50	ug/L	10.0	ND	86.3	62-123			
1,2,4-Trichlorobenzene	8.58	0.21	0.50	ug/L	10.0	ND	85.8	64-124			
Hexachloro-1,3-Butadiene	8.62	1.00	2.00	ug/L	10.0	ND	86.2	58-123			
Naphthalene	9.38	0.27	0.50	ug/L	10.0	ND	93.8	50-134			
1,2,3-Trichlorobenzene	8.97	0.25	0.50	ug/L	10.0	ND	89.7	49-133			
Dichlorodifluoromethane	9.39	0.13	0.20	ug/L	10.0	ND	93.9	48-147			
Methyl tert-butyl Ether	11.3	0.14	0.50	ug/L	10.0	ND	113	71-132			
2-Pentanone	44.8	2.34	5.00	ug/L	50.0	ND	89.6	69-134			
Surrogate: 1,2-Dichloroethane-d4	5.40			ug/L	5.00	4.96	108	80-129			
Surrogate: Toluene-d8	5.17			ug/L	5.00	4.97	103	80-120			
Surrogate: 4-Bromofluorobenzene	5.23			ug/L	5.00	5.09	105	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.92			ug/L	5.00	5.07	98.3	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKE0797-MSD1)											
Source: 22E0401-03			Prepared: 31-May-2022			Analyzed: 31-May-2022 23:38					
Chloromethane	10.8	0.27	0.50	ug/L	10.0	ND	108	60-138	10.90	30	
Vinyl Chloride	10.7	0.08	0.20	ug/L	10.0	ND	107	66-133	0.86	30	
Bromomethane	10.7	0.74	1.00	ug/L	10.0	ND	107	72-131	1.59	30	
Chloroethane	11.9	0.18	0.20	ug/L	10.0	ND	119	60-155	0.71	30	
Trichlorofluoromethane	11.2	0.13	0.20	ug/L	10.0	ND	112	62-141	9.90	30	
Acrolein	51.6	2.70	5.00	ug/L	50.0	ND	103	52-190	6.41	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.5	0.11	0.20	ug/L	10.0	ND	105	76-129	1.18	30	
Acetone	65.7	4.33	5.00	ug/L	50.0	ND	131	58-142	3.53	30	
1,1-Dichloroethene	12.1	0.08	0.20	ug/L	10.0	ND	121	69-135	2.07	30	
Iodomethane	10.4	0.43	1.00	ug/L	10.0	ND	104	56-147	3.25	30	
Methylene Chloride	11.3	0.53	1.00	ug/L	10.0	ND	113	65-135	2.53	30	
Acrylonitrile	10.2	0.40	1.00	ug/L	10.0	ND	102	64-134	5.67	30	
Carbon Disulfide	11.2	0.12	0.20	ug/L	10.0	ND	112	78-125	2.16	30	



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Project: West Duwamish CSO
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Project Manager: Zanna Satterwhite

Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0797 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKE0797-MSD1)											
Source: 22E0401-03			Prepared: 31-May-2022 Analyzed: 31-May-2022 23:38								
trans-1,2-Dichloroethene	11.1	0.07	0.20	ug/L	10.0	ND	111	78-128	4.12	30	
Vinyl Acetate	7.24	0.12	0.20	ug/L	10.0	ND	72.4	55-138	0.63	30	
1,1-Dichloroethane	9.98	0.09	0.20	ug/L	10.0	ND	99.8	76-124	2.39	30	
2-Butanone	60.8	1.77	5.00	ug/L	50.0	ND	122	61-140	4.27	30	
2,2-Dichloropropane	7.99	0.11	0.20	ug/L	10.0	ND	79.9	66-147	0.93	30	
cis-1,2-Dichloroethene	9.81	0.08	0.20	ug/L	10.0	ND	98.1	80-121	0.50	30	
Chloroform	10.2	0.05	0.20	ug/L	10.0	ND	102	80-122	2.44	30	
Bromochloromethane	10.3	0.09	0.20	ug/L	10.0	ND	103	80-121	3.80	30	
1,1,1-Trichloroethane	10.3	0.08	0.20	ug/L	10.0	ND	103	79-123	3.86	30	
1,1-Dichloropropene	10.3	0.09	0.20	ug/L	10.0	ND	103	80-127	6.92	30	
Carbon tetrachloride	9.98	0.09	0.20	ug/L	10.0	ND	99.8	53-137	9.13	30	
1,2-Dichloroethane	11.3	0.08	0.20	ug/L	10.0	ND	113	75-123	5.92	30	
Benzene	10.5	0.05	0.20	ug/L	10.0	ND	105	80-120	5.44	30	
Trichloroethene	10.4	0.07	0.20	ug/L	10.0	ND	104	80-120	6.58	30	
1,2-Dichloropropane	10.6	0.07	0.20	ug/L	10.0	ND	106	80-120	7.59	30	
Bromodichloromethane	10.8	0.09	0.20	ug/L	10.0	ND	108	80-121	7.55	30	
Dibromomethane	11.0	0.06	0.20	ug/L	10.0	ND	110	80-120	8.35	30	
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L	10.0	ND		64-120			* , U
4-Methyl-2-Pentanone	61.1	1.90	5.00	ug/L	50.0	ND	122	67-133	4.96	30	
cis-1,3-Dichloropropene	10.7	0.09	0.20	ug/L	10.0	ND	107	80-124	8.83	30	
Toluene	10.6	0.05	0.20	ug/L	10.0	ND	106	80-120	4.89	30	
trans-1,3-Dichloropropene	10.8	0.09	0.20	ug/L	10.0	ND	108	71-127	2.93	30	
2-Hexanone	66.5	2.06	5.00	ug/L	50.0	ND	133	69-133	5.44	30	
1,1,2-Trichloroethane	10.9	0.10	0.20	ug/L	10.0	ND	109	80-121	7.45	30	
1,3-Dichloropropane	10.7	0.07	0.20	ug/L	10.0	ND	107	80-120	7.24	30	
Tetrachloroethene	9.65	0.09	0.20	ug/L	10.0	ND	96.5	80-120	3.33	30	
Dibromochloromethane	8.47	0.09	0.20	ug/L	10.0	ND	84.7	65-135	5.27	30	
1,2-Dibromoethane	10.7	0.09	0.20	ug/L	10.0	ND	107	80-121	5.18	30	
Chlorobenzene	10.3	0.06	0.20	ug/L	10.0	ND	103	80-120	4.31	30	
Ethylbenzene	10.2	0.05	0.20	ug/L	10.0	ND	102	80-120	4.39	30	
1,1,1,2-Tetrachloroethane	10.3	0.09	0.20	ug/L	10.0	ND	103	80-120	5.44	30	
m,p-Xylene	21.1	0.14	0.40	ug/L	20.0	ND	106	80-121	3.66	30	
o-Xylene	10.2	0.08	0.20	ug/L	10.0	ND	102	80-121	4.68	30	
Xylenes, total	31.3	0.22	0.60	ug/L	30.0	ND	104	76-127	3.99	30	
Styrene	10.1	0.09	0.20	ug/L	10.0	ND	101	80-124	6.50	30	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKE0797 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKE0797-MSD1)											
Source: 22E0401-03			Prepared: 31-May-2022			Analyzed: 31-May-2022 23:38					
Bromoform	7.10	0.15	0.20	ug/L	10.0	ND	71.0	51-134	8.62	30	Q
1,1,2,2-Tetrachloroethane	10.6	0.10	0.20	ug/L	10.0	ND	106	77-123	4.63	30	
1,2,3-Trichloropropane	10.4	0.16	0.50	ug/L	10.0	ND	104	76-125	9.71	30	
trans-1,4-Dichloro 2-Butene	9.11	0.60	1.00	ug/L	10.0	ND	91.1	55-129	0.57	30	
n-Propylbenzene	10.6	0.07	0.20	ug/L	10.0	ND	106	78-130	4.69	30	
Bromobenzene	10.0	0.07	0.20	ug/L	10.0	ND	100	80-120	7.25	30	
Isopropyl Benzene	10.3	0.07	0.20	ug/L	10.0	ND	103	80-128	4.80	30	
2-Chlorotoluene	9.55	0.06	0.20	ug/L	10.0	ND	95.5	78-122	5.76	30	
4-Chlorotoluene	9.72	0.06	0.20	ug/L	10.0	ND	97.2	80-121	6.26	30	
t-Butylbenzene	10.1	0.07	0.20	ug/L	10.0	ND	101	78-125	4.86	30	
1,3,5-Trimethylbenzene	10.4	0.07	0.20	ug/L	10.0	ND	104	80-129	6.49	30	
1,2,4-Trimethylbenzene	10.3	0.10	0.20	ug/L	10.0	ND	103	80-127	5.00	30	
s-Butylbenzene	10.1	0.06	0.20	ug/L	10.0	ND	101	78-129	5.27	30	
4-Isopropyl Toluene	10.3	0.08	0.20	ug/L	10.0	ND	103	79-130	8.28	30	
1,3-Dichlorobenzene	10.2	0.08	0.20	ug/L	10.0	ND	102	80-120	6.08	30	
1,4-Dichlorobenzene	9.95	0.10	0.20	ug/L	10.0	ND	99.5	80-120	8.12	30	
n-Butylbenzene	10.6	0.18	0.20	ug/L	10.0	ND	106	74-129	8.27	30	
1,2-Dichlorobenzene	9.98	0.08	0.20	ug/L	10.0	ND	99.8	80-120	7.25	30	
1,2-Dibromo-3-chloropropane	9.88	0.39	0.50	ug/L	10.0	ND	98.8	62-123	13.50	30	
1,2,4-Trichlorobenzene	9.48	0.21	0.50	ug/L	10.0	ND	94.8	64-124	10.00	30	
Hexachloro-1,3-Butadiene	9.92	1.00	2.00	ug/L	10.0	ND	99.2	58-123	14.00	30	
Naphthalene	10.2	0.27	0.50	ug/L	10.0	ND	102	50-134	8.62	30	
1,2,3-Trichlorobenzene	9.87	0.25	0.50	ug/L	10.0	ND	98.7	49-133	9.54	30	
Dichlorodifluoromethane	10.9	0.13	0.20	ug/L	10.0	ND	109	48-147	14.80	30	
Methyl tert-butyl Ether	9.64	0.14	0.50	ug/L	10.0	ND	96.4	71-132	16.30	30	
2-Pentanone	45.3	2.34	5.00	ug/L	50.0	ND	90.6	69-134	1.04	30	
Surrogate: 1,2-Dichloroethane-d4	5.46			ug/L	5.00	4.96	109	80-129			
Surrogate: Toluene-d8	5.10			ug/L	5.00	4.97	102	80-120			
Surrogate: 4-Bromofluorobenzene	5.08			ug/L	5.00	5.09	102	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.12			ug/L	5.00	5.07	102	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKF0002 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKF0002-BLK1)		Prepared: 01-Jun-2022 Analyzed: 01-Jun-2022 08:31								
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.91		ug/L	5.00		98.2	80-120			
Surrogate: 4-Bromofluorobenzene	4.85		ug/L	5.00		97.1	80-120			
LCS (BKF0002-BS1)		Prepared: 01-Jun-2022 Analyzed: 01-Jun-2022 06:49								
Gasoline Range Organics (Tol-Nap)	924	100	ug/L	1000		92.4	72-128			
Surrogate: Toluene-d8	5.26		ug/L	5.00		105	80-120			
Surrogate: 4-Bromofluorobenzene	5.15		ug/L	5.00		103	80-120			
LCS Dup (BKF0002-BSD1)		Prepared: 01-Jun-2022 Analyzed: 01-Jun-2022 07:30								
Gasoline Range Organics (Tol-Nap)	897	100	ug/L	1000		89.7	72-128	2.92	30	
Surrogate: Toluene-d8	5.07		ug/L	5.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	5.19		ug/L	5.00		104	80-120			
Matrix Spike (BKF0002-MS1)		Source: 22E0401-03		Prepared: 01-Jun-2022 Analyzed: 01-Jun-2022 14:29						
Gasoline Range Organics (Tol-Nap)	688	100	ug/L	1000	ND	68.8	72-128			*
Surrogate: Toluene-d8	5.16		ug/L	5.00	4.95	103	80-120			
Surrogate: 4-Bromofluorobenzene	5.41		ug/L	5.00	5.27	108	80-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BKF0002-MSD1)		Source: 22E0401-03		Prepared: 01-Jun-2022 Analyzed: 01-Jun-2022 14:51						
Gasoline Range Organics (Tol-Nap)	711	100	ug/L	1000	ND	71.1	72-128	3.23	30	*
Surrogate: Toluene-d8	5.12		ug/L	5.00	4.95	102	80-120			
Surrogate: 4-Bromofluorobenzene	5.53		ug/L	5.00	5.27	111	80-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



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Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0704 - EPA 3510C SepF

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0704-BLK1)						Prepared: 27-May-2022 Analyzed: 09-Jun-2022 13:00					
Phenol	ND	0.01	0.2	ug/L							U
bis(2-chloroethyl) ether	ND	0.03	0.2	ug/L							U
2-Chlorophenol	ND	0.03	0.2	ug/L							U
1,3-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,4-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,2-Dichlorobenzene	ND	0.03	0.2	ug/L							U
Benzyl Alcohol	ND	0.02	0.2	ug/L							U
2,2'-Oxybis(1-chloropropane)	ND	0.03	0.2	ug/L							U
2-Methylphenol	ND	0.03	0.2	ug/L							U
Hexachloroethane	ND	0.04	0.2	ug/L							U
N-Nitroso-di-n-Propylamine	ND	0.04	0.2	ug/L							U
4-Methylphenol	ND	0.03	0.2	ug/L							U
Nitrobenzene	ND	0.03	0.2	ug/L							U
Isophorone	ND	0.03	0.2	ug/L							U
2-Nitrophenol	ND	0.04	1.0	ug/L							U
2,4-Dimethylphenol	ND	0.3	1.0	ug/L							U
Bis(2-Chloroethoxy)methane	ND	0.03	0.2	ug/L							U
2,4-Dichlorophenol	ND	0.1	1.0	ug/L							U
1,2,4-Trichlorobenzene	ND	0.03	0.2	ug/L							U
Naphthalene	ND	0.03	0.2	ug/L							U
Benzoic acid	ND	0.1	2.0	ug/L							U
4-Chloroaniline	ND	0.04	1.0	ug/L							U
Hexachlorobutadiene	ND	0.04	0.2	ug/L							U
4-Chloro-3-Methylphenol	ND	0.1	1.0	ug/L							U
2-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Hexachlorocyclopentadiene	ND	0.1	1.0	ug/L							U
2,4,6-Trichlorophenol	ND	0.2	1.0	ug/L							U
2,4,5-Trichlorophenol	ND	0.1	1.0	ug/L							U
2-Chloronaphthalene	ND	0.03	0.2	ug/L							U
2-Nitroaniline	ND	0.2	1.0	ug/L							U
Acenaphthylene	ND	0.02	0.2	ug/L							U
Dimethylphthalate	ND	0.04	0.2	ug/L							U
2,6-Dinitrotoluene	ND	0.2	1.0	ug/L							U
Acenaphthene	ND	0.03	0.2	ug/L							U
3-Nitroaniline	ND	0.2	1.0	ug/L							U



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0704 - EPA 3510C SepF

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0704-BLK1)						Prepared: 27-May-2022 Analyzed: 09-Jun-2022 13:00					
2,4-Dinitrophenol	ND	0.2	2.0	ug/L							U
Dibenzofuran	ND	0.02	0.2	ug/L							U
4-Nitrophenol	ND	0.06	1.0	ug/L							U
2,4-Dinitrotoluene	ND	0.1	1.0	ug/L							U
Fluorene	ND	0.02	0.2	ug/L							U
4-Chlorophenylphenyl ether	ND	0.02	0.2	ug/L							U
Diethyl phthalate	ND	0.06	0.2	ug/L							U
4-Nitroaniline	ND	0.2	1.0	ug/L							U
4,6-Dinitro-2-methylphenol	ND	0.4	2.0	ug/L							U
N-Nitrosodiphenylamine	ND	0.03	0.2	ug/L							U
4-Bromophenyl phenyl ether	ND	0.02	0.2	ug/L							U
Hexachlorobenzene	ND	0.04	0.2	ug/L							U
Pentachlorophenol	ND	0.1	1.0	ug/L							U
Phenanthrene	ND	0.02	0.2	ug/L							U
Anthracene	ND	0.03	0.2	ug/L							U
Carbazole	ND	0.04	0.2	ug/L							U
Di-n-Butylphthalate	ND	0.05	0.2	ug/L							U
Fluoranthene	ND	0.03	0.2	ug/L							U
Pyrene	ND	0.03	0.2	ug/L							U
Butylbenzylphthalate	ND	0.07	0.2	ug/L							U
Benzo(a)anthracene	ND	0.04	0.2	ug/L							U
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L							U
Chrysene	ND	0.04	0.2	ug/L							U
bis(2-Ethylhexyl)phthalate	ND	0.2	0.2	ug/L							U
Di-n-Octylphthalate	ND	0.05	0.2	ug/L							U
Benzo(a)fluoranthene, Total	ND	0.08	0.4	ug/L							U
Benzo(a)pyrene	ND	0.05	0.2	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.06	0.2	ug/L							U
Dibenzo(a,h)anthracene	ND	0.07	0.2	ug/L							U
Benzo(g,h,i)perylene	ND	0.04	0.2	ug/L							U
1-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Surrogate: 2-Fluorophenol	5.08			ug/L	7.50		67.8	30-160			
Surrogate: Phenol-d5	2.96			ug/L	7.50		39.4	30-160			
Surrogate: 2-Chlorophenol-d4	7.25			ug/L	7.50		96.6	30-160			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0704 - EPA 3510C SepF

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0704-BLK1)						Prepared: 27-May-2022 Analyzed: 09-Jun-2022 13:00					
Surrogate: 1,2-Dichlorobenzene-d4	4.25			ug/L	5.00		85.0	30-160			
Surrogate: Nitrobenzene-d5	5.02			ug/L	5.00		100	30-160			
Surrogate: 2-Fluorobiphenyl	4.83			ug/L	5.00		96.7	30-160			
Surrogate: 2,4,6-Tribromophenol	7.51			ug/L	7.50		100	30-160			
Surrogate: p-Terphenyl-d14	6.04			ug/L	5.00		121	30-160			
LCS (BKE0704-BS1)						Prepared: 27-May-2022 Analyzed: 09-Jun-2022 13:37					
Phenol	1.7	0.01	0.2	ug/L	5.00		34.8	30-160			
bis(2-chloroethyl) ether	4.0	0.03	0.2	ug/L	5.00		79.7	30-160			
2-Chlorophenol	3.9	0.03	0.2	ug/L	5.00		79.0	30-160			
1,3-Dichlorobenzene	3.2	0.03	0.2	ug/L	5.00		64.3	30-160			
1,4-Dichlorobenzene	3.5	0.03	0.2	ug/L	5.00		70.0	30-160			
1,2-Dichlorobenzene	3.3	0.03	0.2	ug/L	5.00		65.9	30-160			
Benzyl Alcohol	2.9	0.02	0.2	ug/L	5.00		58.0	30-160			
2,2'-Oxybis(1-chloropropane)	4.1	0.03	0.2	ug/L	5.00		81.0	30-160			
2-Methylphenol	3.4	0.03	0.2	ug/L	5.00		67.6	30-160			
Hexachloroethane	3.4	0.04	0.2	ug/L	5.00		68.6	30-160			
N-Nitroso-di-n-Propylamine	3.8	0.04	0.2	ug/L	5.00		76.3	30-160			
4-Methylphenol	3.3	0.03	0.2	ug/L	5.00		66.8	30-160			
Nitrobenzene	4.0	0.03	0.2	ug/L	5.00		80.5	30-160			
Isophorone	5.9	0.03	0.2	ug/L	5.00		117	30-160			
2-Nitrophenol	4.1	0.04	1.0	ug/L	5.00		81.9	30-160			
2,4-Dimethylphenol	12.1	0.3	1.0	ug/L	13.0		93.4	30-160			
Bis(2-Chloroethoxy)methane	4.4	0.03	0.2	ug/L	5.00		88.4	30-160			
2,4-Dichlorophenol	15.3	0.1	1.0	ug/L	13.0		117	30-160			
1,2,4-Trichlorobenzene	3.2	0.03	0.2	ug/L	5.00		64.0	30-160			
Naphthalene	3.5	0.03	0.2	ug/L	5.00		69.0	30-160			
Benzoic acid	8.7	0.1	2.0	ug/L	23.0		37.6	30-160			
4-Chloroaniline	2.7	0.04	1.0	ug/L	13.0		20.8	30-160			*
Hexachlorobutadiene	3.0	0.04	0.2	ug/L	5.00		59.3	30-160			
4-Chloro-3-Methylphenol	15.5	0.1	1.0	ug/L	13.0		119	30-160			
2-Methylnaphthalene	3.9	0.03	0.2	ug/L	5.00		77.3	30-160			
Hexachlorocyclopentadiene	7.0	0.1	1.0	ug/L	13.0		53.6	30-160			
2,4,6-Trichlorophenol	16.3	0.2	1.0	ug/L	13.0		125	30-160			Q
2,4,5-Trichlorophenol	16.0	0.1	1.0	ug/L	13.0		123	30-160			Q



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0704 - EPA 3510C SepF

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKE0704-BS1)					Prepared: 27-May-2022 Analyzed: 09-Jun-2022 13:37						
2-Chloronaphthalene	3.9	0.03	0.2	ug/L	5.00		77.4	30-160			
2-Nitroaniline	13.3	0.2	1.0	ug/L	13.0		102	30-160			
Acenaphthylene	3.9	0.02	0.2	ug/L	5.00		78.4	30-160			
Dimethylphthalate	4.3	0.04	0.2	ug/L	5.00		86.2	30-160			
2,6-Dinitrotoluene	13.9	0.2	1.0	ug/L	13.0		107	30-160			
Acenaphthene	3.8	0.03	0.2	ug/L	5.00		75.1	30-160			
3-Nitroaniline	11.5	0.2	1.0	ug/L	13.0		88.2	30-160			
2,4-Dinitrophenol	26.5	0.2	2.0	ug/L	23.0		115	30-160			
Dibenzofuran	4.3	0.02	0.2	ug/L	5.00		86.1	30-160			
4-Nitrophenol	4.7	0.06	1.0	ug/L	13.0		36.3	30-160			
2,4-Dinitrotoluene	12.6	0.1	1.0	ug/L	13.0		96.6	30-160			
Fluorene	3.9	0.02	0.2	ug/L	5.00		77.4	30-160			
4-Chlorophenylphenyl ether	4.2	0.02	0.2	ug/L	5.00		84.2	30-160			
Diethyl phthalate	4.4	0.06	0.2	ug/L	5.00		88.1	30-160			
4-Nitroaniline	11.6	0.2	1.0	ug/L	13.0		89.0	30-160			
4,6-Dinitro-2-methylphenol	28.5	0.4	2.0	ug/L	23.0		124	30-160			
N-Nitrosodiphenylamine	4.0	0.03	0.2	ug/L	5.00		79.1	30-160			
4-Bromophenyl phenyl ether	4.6	0.02	0.2	ug/L	5.00		92.7	30-160			
Hexachlorobenzene	4.4	0.04	0.2	ug/L	5.00		87.3	30-160			
Pentachlorophenol	14.6	0.1	1.0	ug/L	13.0		112	30-160			
Phenanthrene	3.9	0.02	0.2	ug/L	5.00		78.7	30-160			
Anthracene	4.3	0.03	0.2	ug/L	5.00		85.2	30-160			
Carbazole	4.0	0.04	0.2	ug/L	5.00		79.8	30-160			
Di-n-Butylphthalate	4.3	0.05	0.2	ug/L	5.00		85.4	30-160			
Fluoranthene	4.8	0.03	0.2	ug/L	5.00		95.5	30-160			Q
Pyrene	4.6	0.03	0.2	ug/L	5.00		92.0	30-160			
Butylbenzylphthalate	4.7	0.07	0.2	ug/L	5.00		94.3	30-160			Q
Benzo(a)anthracene	4.2	0.04	0.2	ug/L	5.00		83.9	30-160			
3,3'-Dichlorobenzidine	12.2	0.3	1.0	ug/L	13.0		93.9	30-160			Q
Chrysene	4.1	0.04	0.2	ug/L	5.00		82.2	30-160			
bis(2-Ethylhexyl)phthalate	4.2	0.2	0.2	ug/L	5.00		84.1	30-160			
Di-n-Octylphthalate	4.1	0.05	0.2	ug/L	5.00		81.7	30-160			
Benzo(a)fluoranthene, Total	8.1	0.08	0.4	ug/L	10.0		81.1	30-160			
Benzo(a)pyrene	4.5	0.05	0.2	ug/L	5.00		89.9	30-160			
Indeno(1,2,3-cd)pyrene	4.8	0.06	0.2	ug/L	5.00		96.2	30-160			Q



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Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0704 - EPA 3510C SepF

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKE0704-BS1)					Prepared: 27-May-2022 Analyzed: 09-Jun-2022 13:37						
Dibenzo(a,h)anthracene	4.8	0.07	0.2	ug/L	5.00		96.4	30-160			Q
Benzo(g,h,i)perylene	4.9	0.04	0.2	ug/L	5.00		97.0	30-160			Q
1-Methylnaphthalene	4.0	0.03	0.2	ug/L	5.00		80.9	30-160			
Surrogate: 2-Fluorophenol	5.11			ug/L	7.50		68.1	30-160			
Surrogate: Phenol-d5	3.09			ug/L	7.50		41.2	30-160			
Surrogate: 2-Chlorophenol-d4	7.44			ug/L	7.50		99.2	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	4.25			ug/L	5.00		84.9	30-160			
Surrogate: Nitrobenzene-d5	5.23			ug/L	5.00		105	30-160			
Surrogate: 2-Fluorobiphenyl	5.11			ug/L	5.00		102	30-160			
Surrogate: 2,4,6-Tribromophenol	8.49			ug/L	7.50		113	30-160			
Surrogate: p-Terphenyl-d14	6.31			ug/L	5.00		126	30-160			
Matrix Spike (BKE0704-MS1)					Source: 22E0401-03 Prepared: 27-May-2022 Analyzed: 09-Jun-2022 14:51						
Phenol	1.8	0.01	0.2	ug/L	5.00	ND	35.3	30-160			
bis(2-chloroethyl) ether	3.9	0.03	0.2	ug/L	5.00	ND	78.0	30-160			
2-Chlorophenol	3.9	0.03	0.2	ug/L	5.00	ND	78.2	30-160			
1,3-Dichlorobenzene	3.2	0.03	0.2	ug/L	5.00	ND	63.3	30-160			
1,4-Dichlorobenzene	3.4	0.03	0.2	ug/L	5.00	ND	68.9	30-160			
1,2-Dichlorobenzene	3.3	0.03	0.2	ug/L	5.00	ND	66.0	30-160			
Benzyl Alcohol	2.9	0.02	0.2	ug/L	5.00	ND	57.2	30-160			
2,2'-Oxybis(1-chloropropane)	3.9	0.03	0.2	ug/L	5.00	ND	78.8	30-160			
2-Methylphenol	3.5	0.03	0.2	ug/L	5.00	ND	70.2	30-160			
Hexachloroethane	3.3	0.04	0.2	ug/L	5.00	ND	66.9	30-160			
N-Nitroso-di-n-Propylamine	3.6	0.04	0.2	ug/L	5.00	ND	71.4	30-160			
4-Methylphenol	3.4	0.03	0.2	ug/L	5.00	ND	67.7	30-160			
Nitrobenzene	4.1	0.03	0.2	ug/L	5.00	ND	81.5	30-160			
Isophorone	5.3	0.03	0.2	ug/L	5.00	ND	105	30-160			
2-Nitrophenol	4.2	0.04	1.0	ug/L	5.00	ND	83.0	30-160			
2,4-Dimethylphenol	12.9	0.3	1.0	ug/L	13.0	ND	99.4	30-160			
Bis(2-Chloroethoxy)methane	4.4	0.03	0.2	ug/L	5.00	ND	87.3	30-160			
2,4-Dichlorophenol	15.4	0.1	1.0	ug/L	13.0	ND	118	30-160			
1,2,4-Trichlorobenzene	3.3	0.03	0.2	ug/L	5.00	ND	65.4	30-160			
Naphthalene	3.5	0.03	0.2	ug/L	5.00	ND	70.1	30-160			
Benzoic acid	11.4	0.1	2.0	ug/L	23.0	ND	49.4	30-160			
4-Chloroaniline	3.5	0.04	1.0	ug/L	13.0	ND	27.2	30-160			*



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Reported:
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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0704 - EPA 3510C SepF

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKE0704-MS1)											
Source: 22E0401-03			Prepared: 27-May-2022			Analyzed: 09-Jun-2022 14:51					
Hexachlorobutadiene	2.9	0.04	0.2	ug/L	5.00	ND	58.1	30-160			
4-Chloro-3-Methylphenol	15.8	0.1	1.0	ug/L	13.0	ND	122	30-160			
2-Methylnaphthalene	3.9	0.03	0.2	ug/L	5.00	ND	78.9	30-160			
Hexachlorocyclopentadiene	6.8	0.1	1.0	ug/L	13.0	ND	52.4	30-160			
2,4,6-Trichlorophenol	17.0	0.2	1.0	ug/L	13.0	ND	131	30-160			Q
2,4,5-Trichlorophenol	16.4	0.1	1.0	ug/L	13.0	ND	126	30-160			Q
2-Chloronaphthalene	4.0	0.03	0.2	ug/L	5.00	ND	79.8	30-160			
2-Nitroaniline	14.8	0.2	1.0	ug/L	13.0	ND	114	30-160			
Acenaphthylene	4.0	0.02	0.2	ug/L	5.00	ND	80.4	30-160			
Dimethylphthalate	4.5	0.04	0.2	ug/L	5.00	ND	89.1	30-160			
2,6-Dinitrotoluene	15.0	0.2	1.0	ug/L	13.0	ND	116	30-160			
Acenaphthene	4.1	0.03	0.2	ug/L	5.00	0.2	79.0	30-160			
3-Nitroaniline	12.8	0.2	1.0	ug/L	13.0	ND	98.8	30-160			
2,4-Dinitrophenol	28.7	0.2	2.0	ug/L	23.0	ND	125	30-160			
Dibenzofuran	4.5	0.02	0.2	ug/L	5.00	ND	89.2	30-160			
4-Nitrophenol	5.0	0.06	1.0	ug/L	13.0	ND	38.5	30-160			
2,4-Dinitrotoluene	13.7	0.1	1.0	ug/L	13.0	ND	105	30-160			
Fluorene	4.1	0.02	0.2	ug/L	5.00	ND	81.3	30-160			
4-Chlorophenylphenyl ether	4.3	0.02	0.2	ug/L	5.00	ND	86.1	30-160			
Diethyl phthalate	4.6	0.06	0.2	ug/L	5.00	ND	91.2	30-160			
4-Nitroaniline	12.8	0.2	1.0	ug/L	13.0	ND	98.2	30-160			
4,6-Dinitro-2-methylphenol	29.4	0.4	2.0	ug/L	23.0	ND	128	30-160			
N-Nitrosodiphenylamine	4.4	0.03	0.2	ug/L	5.00	ND	88.4	30-160			
4-Bromophenyl phenyl ether	4.8	0.02	0.2	ug/L	5.00	ND	95.5	30-160			
Hexachlorobenzene	5.1	0.04	0.2	ug/L	5.00	ND	101	30-160			
Pentachlorophenol	15.9	0.1	1.0	ug/L	13.0	ND	122	30-160			
Phenanthrene	4.1	0.02	0.2	ug/L	5.00	ND	82.3	30-160			
Anthracene	4.5	0.03	0.2	ug/L	5.00	ND	89.8	30-160			
Carbazole	4.3	0.04	0.2	ug/L	5.00	ND	85.3	30-160			
Di-n-Butylphthalate	4.5	0.05	0.2	ug/L	5.00	ND	89.6	30-160			
Fluoranthene	4.9	0.03	0.2	ug/L	5.00	ND	97.3	30-160			Q
Pyrene	4.6	0.03	0.2	ug/L	5.00	ND	93.0	30-160			
Butylbenzylphthalate	4.8	0.07	0.2	ug/L	5.00	ND	96.0	30-160			Q
Benzo(a)anthracene	4.4	0.04	0.2	ug/L	5.00	ND	87.1	30-160			
3,3'-Dichlorobenzidine	8.4	0.3	1.0	ug/L	13.0	ND	64.6	30-160			Q



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0704 - EPA 3510C SepF

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKE0704-MS1)											
Source: 22E0401-03 Prepared: 27-May-2022 Analyzed: 09-Jun-2022 14:51											
Chrysene	4.3	0.04	0.2	ug/L	5.00	ND	85.2	30-160			
bis(2-Ethylhexyl)phthalate	4.4	0.2	0.2	ug/L	5.00	ND	87.9	30-160			
Di-n-Octylphthalate	4.3	0.05	0.2	ug/L	5.00	ND	85.4	30-160			
Benzo(a)anthracene, Total	8.2	0.08	0.4	ug/L	10.0	ND	81.6	30-160			
Benzo(a)pyrene	4.7	0.05	0.2	ug/L	5.00	ND	94.1	30-160			
Indeno(1,2,3-cd)pyrene	4.9	0.06	0.2	ug/L	5.00	ND	98.1	30-160			Q
Dibenzo(a,h)anthracene	4.9	0.07	0.2	ug/L	5.00	ND	99.0	30-160			Q
Benzo(g,h,i)perylene	5.0	0.04	0.2	ug/L	5.00	ND	99.3	30-160			Q
1-Methylnaphthalene	4.2	0.03	0.2	ug/L	5.00	ND	83.1	30-160			
Surrogate: 2-Fluorophenol	5.26			ug/L	7.50	4.08	70.1	30-160			
Surrogate: Phenol-d5	3.25			ug/L	7.50	2.43	43.3	30-160			
Surrogate: 2-Chlorophenol-d4	7.67			ug/L	7.50	5.98	102	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	4.41			ug/L	5.00	3.42	88.2	30-160			
Surrogate: Nitrobenzene-d5	5.41			ug/L	5.00	4.11	108	30-160			
Surrogate: 2-Fluorobiphenyl	5.46			ug/L	5.00	4.39	109	30-160			
Surrogate: 2,4,6-Tribromophenol	9.33			ug/L	7.50	7.78	124	30-160			
Surrogate: p-Terphenyl-d14	6.75			ug/L	5.00	5.96	135	30-160			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKE0704-MSD1)											
Source: 22E0401-03 Prepared: 27-May-2022 Analyzed: 09-Jun-2022 15:28											
Phenol	1.5	0.01	0.2	ug/L	5.00	ND	30.0	30-160	16.20	30	
bis(2-chloroethyl) ether	3.3	0.03	0.2	ug/L	5.00	ND	66.5	30-160	15.80	30	
2-Chlorophenol	3.6	0.03	0.2	ug/L	5.00	ND	71.8	30-160	8.56	30	
1,3-Dichlorobenzene	2.7	0.03	0.2	ug/L	5.00	ND	53.8	30-160	16.40	30	
1,4-Dichlorobenzene	2.9	0.03	0.2	ug/L	5.00	ND	58.3	30-160	16.60	30	
1,2-Dichlorobenzene	2.8	0.03	0.2	ug/L	5.00	ND	55.5	30-160	17.20	30	
Benzyl Alcohol	2.5	0.02	0.2	ug/L	5.00	ND	49.8	30-160	13.90	30	
2,2'-Oxybis(1-chloropropane)	3.3	0.03	0.2	ug/L	5.00	ND	66.9	30-160	16.40	30	
2-Methylphenol	3.0	0.03	0.2	ug/L	5.00	ND	60.2	30-160	15.30	30	
Hexachloroethane	2.8	0.04	0.2	ug/L	5.00	ND	56.7	30-160	16.50	30	
N-Nitroso-di-n-Propylamine	3.4	0.04	0.2	ug/L	5.00	ND	68.5	30-160	4.05	30	
4-Methylphenol	2.9	0.03	0.2	ug/L	5.00	ND	58.5	30-160	14.50	30	
Nitrobenzene	3.5	0.03	0.2	ug/L	5.00	ND	69.1	30-160	16.30	30	
Isophorone	5.0	0.03	0.2	ug/L	5.00	ND	99.5	30-160	5.69	30	



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Reported:
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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0704 - EPA 3510C SepF

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKE0704-MSD1)											
Source: 22E0401-03			Prepared: 27-May-2022			Analyzed: 09-Jun-2022 15:28					
2-Nitrophenol	3.5	0.04	1.0	ug/L	5.00	ND	69.4	30-160	17.80	30	
2,4-Dimethylphenol	12.0	0.3	1.0	ug/L	13.0	ND	92.1	30-160	7.59	30	
Bis(2-Chloroethoxy)methane	3.8	0.03	0.2	ug/L	5.00	ND	75.0	30-160	15.20	30	
2,4-Dichlorophenol	13.2	0.1	1.0	ug/L	13.0	ND	101	30-160	15.60	30	
1,2,4-Trichlorobenzene	2.8	0.03	0.2	ug/L	5.00	ND	55.1	30-160	17.10	30	
Naphthalene	3.0	0.03	0.2	ug/L	5.00	ND	59.8	30-160	15.90	30	
Benzoic acid	6.8	0.1	2.0	ug/L	23.0	ND	29.5	30-160	50.40	30	*
4-Chloroaniline	2.5	0.04	1.0	ug/L	13.0	ND	19.4	30-160	33.50	30	*
Hexachlorobutadiene	2.4	0.04	0.2	ug/L	5.00	ND	48.5	30-160	18.10	30	
4-Chloro-3-Methylphenol	13.8	0.1	1.0	ug/L	13.0	ND	107	30-160	13.20	30	
2-Methylnaphthalene	3.5	0.03	0.2	ug/L	5.00	ND	69.0	30-160	13.30	30	
Hexachlorocyclopentadiene	6.6	0.1	1.0	ug/L	13.0	ND	51.0	30-160	2.63	30	
2,4,6-Trichlorophenol	14.9	0.2	1.0	ug/L	13.0	ND	115	30-160	13.30	30	Q
2,4,5-Trichlorophenol	14.9	0.1	1.0	ug/L	13.0	ND	114	30-160	9.48	30	Q
2-Chloronaphthalene	3.5	0.03	0.2	ug/L	5.00	ND	69.2	30-160	14.20	30	
2-Nitroaniline	14.3	0.2	1.0	ug/L	13.0	ND	110	30-160	3.40	30	
Acenaphthylene	3.6	0.02	0.2	ug/L	5.00	ND	72.3	30-160	10.50	30	
Dimethylphthalate	4.0	0.04	0.2	ug/L	5.00	ND	80.9	30-160	9.55	30	
2,6-Dinitrotoluene	13.7	0.2	1.0	ug/L	13.0	ND	106	30-160	9.10	30	
Acenaphthene	3.6	0.03	0.2	ug/L	5.00	0.2	69.0	30-160	13.00	30	
3-Nitroaniline	11.4	0.2	1.0	ug/L	13.0	ND	87.3	30-160	12.30	30	
2,4-Dinitrophenol	24.9	0.2	2.0	ug/L	23.0	ND	108	30-160	14.20	30	
Dibenzofuran	4.0	0.02	0.2	ug/L	5.00	ND	79.1	30-160	12.00	30	
4-Nitrophenol	4.4	0.06	1.0	ug/L	13.0	ND	34.0	30-160	12.60	30	
2,4-Dinitrotoluene	12.5	0.1	1.0	ug/L	13.0	ND	96.4	30-160	8.80	30	
Fluorene	3.8	0.02	0.2	ug/L	5.00	ND	75.5	30-160	7.46	30	
4-Chlorophenylphenyl ether	3.9	0.02	0.2	ug/L	5.00	ND	77.9	30-160	10.00	30	
Diethyl phthalate	4.2	0.06	0.2	ug/L	5.00	ND	83.6	30-160	8.69	30	
4-Nitroaniline	11.9	0.2	1.0	ug/L	13.0	ND	91.9	30-160	6.59	30	
4,6-Dinitro-2-methylphenol	27.2	0.4	2.0	ug/L	23.0	ND	118	30-160	7.58	30	
N-Nitrosodiphenylamine	4.1	0.03	0.2	ug/L	5.00	ND	81.9	30-160	7.59	30	
4-Bromophenyl phenyl ether	4.4	0.02	0.2	ug/L	5.00	ND	87.3	30-160	8.97	30	
Hexachlorobenzene	4.1	0.04	0.2	ug/L	5.00	ND	82.6	30-160	20.20	30	
Pentachlorophenol	13.8	0.1	1.0	ug/L	13.0	ND	106	30-160	13.70	30	
Phenanthrene	3.8	0.02	0.2	ug/L	5.00	ND	76.1	30-160	7.75	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKE0704 - EPA 3510C SepF

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKE0704-MSD1)											
		Source: 22E0401-03			Prepared: 27-May-2022		Analyzed: 09-Jun-2022 15:28				
Anthracene	4.1	0.03	0.2	ug/L	5.00	ND	82.9	30-160	8.06	30	
Carbazole	3.9	0.04	0.2	ug/L	5.00	ND	78.4	30-160	8.46	30	
Di-n-Butylphthalate	4.2	0.05	0.2	ug/L	5.00	ND	83.5	30-160	7.01	30	
Fluoranthene	4.6	0.03	0.2	ug/L	5.00	ND	91.2	30-160	6.50	30	Q
Pyrene	4.4	0.03	0.2	ug/L	5.00	ND	88.4	30-160	5.07	30	
Butylbenzylphthalate	4.5	0.07	0.2	ug/L	5.00	ND	90.9	30-160	5.43	30	Q
Benzo(a)anthracene	4.1	0.04	0.2	ug/L	5.00	ND	82.0	30-160	6.05	30	
3,3'-Dichlorobenzidine	11.3	0.3	1.0	ug/L	13.0	ND	87.3	30-160	29.80	30	Q
Chrysene	4.0	0.04	0.2	ug/L	5.00	ND	79.4	30-160	7.05	30	
bis(2-Ethylhexyl)phthalate	4.1	0.2	0.2	ug/L	5.00	ND	82.7	30-160	6.12	30	
Di-n-Octylphthalate	4.1	0.05	0.2	ug/L	5.00	ND	81.3	30-160	4.92	30	
Benzo(a)fluoranthene, Total	7.7	0.08	0.4	ug/L	10.0	ND	76.8	30-160	6.07	30	
Benzo(a)pyrene	4.4	0.05	0.2	ug/L	5.00	ND	87.8	30-160	6.91	30	
Indeno(1,2,3-cd)pyrene	4.6	0.06	0.2	ug/L	5.00	ND	92.4	30-160	6.03	30	Q
Dibenzo(a,h)anthracene	4.6	0.07	0.2	ug/L	5.00	ND	92.5	30-160	6.76	30	Q
Benzo(g,h,i)perylene	4.6	0.04	0.2	ug/L	5.00	ND	92.7	30-160	6.85	30	Q
1-Methylnaphthalene	3.6	0.03	0.2	ug/L	5.00	ND	71.6	30-160	15.00	30	
Surrogate: 2-Fluorophenol	4.17			ug/L	7.50	4.08	55.5	30-160			
Surrogate: Phenol-d5	2.59			ug/L	7.50	2.43	34.6	30-160			
Surrogate: 2-Chlorophenol-d4	6.15			ug/L	7.50	5.98	82.0	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	3.48			ug/L	5.00	3.42	69.7	30-160			
Surrogate: Nitrobenzene-d5	4.34			ug/L	5.00	4.11	86.8	30-160			
Surrogate: 2-Fluorobiphenyl	4.44			ug/L	5.00	4.39	88.9	30-160			
Surrogate: 2,4,6-Tribromophenol	7.88			ug/L	7.50	7.78	105	30-160			
Surrogate: p-Terphenyl-d14	6.02			ug/L	5.00	5.96	120	30-160			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKE0703 - EPA 3510C SepF

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0703-BLK1)											
						Prepared: 27-May-2022 Analyzed: 21-Jun-2022 12:09					
Naphthalene	0.003	0.001	0.010	ug/L							J
2-Methylnaphthalene	ND	0.001	0.010	ug/L							U
1-Methylnaphthalene	ND	0.0009	0.010	ug/L							U
Acenaphthylene	ND	0.002	0.010	ug/L							U
Acenaphthene	ND	0.003	0.010	ug/L							U
Dibenzofuran	ND	0.002	0.010	ug/L							U
Fluorene	ND	0.002	0.010	ug/L							U
Phenanthrene	ND	0.001	0.010	ug/L							U
Anthracene	ND	0.001	0.010	ug/L							U
Carbazole	ND	0.001	0.010	ug/L							U
Fluoranthene	ND	0.002	0.010	ug/L							U
Pyrene	ND	0.001	0.010	ug/L							U
Benzo(a)anthracene	ND	0.0008	0.010	ug/L							U
Chrysene	ND	0.0009	0.010	ug/L							U
Benzo(b)fluoranthene	ND	0.0005	0.010	ug/L							U
Benzo(k)fluoranthene	ND	0.003	0.010	ug/L							U
Benzo(j)fluoranthene	ND	0.002	0.010	ug/L							U
Benzofluoranthenes, Total	ND	0.004	0.010	ug/L							U
Benzo(a)pyrene	ND	0.002	0.010	ug/L							U
Perylene	ND	0.006	0.010	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.001	0.010	ug/L							U
Dibenzo(a,h)anthracene	ND	0.001	0.010	ug/L							U
Benzo(g,h,i)perylene	ND	0.001	0.010	ug/L							U
Surrogate: 2-Methylnaphthalene-d10	0.219			ug/L	0.300		72.9	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.329			ug/L	0.300		110	29-120			Q
Surrogate: Fluoranthene-d10	0.272			ug/L	0.300		90.6	57-120			

LCS (BKE0703-BS1)											
						Prepared: 27-May-2022 Analyzed: 21-Jun-2022 12:42					
Naphthalene	0.222	0.001	0.010	ug/L	0.300		74.1	37-120			
2-Methylnaphthalene	0.233	0.001	0.010	ug/L	0.300		77.8	37-120			
1-Methylnaphthalene	0.234	0.0009	0.010	ug/L	0.300		77.9	29-120			
Acenaphthylene	0.246	0.002	0.010	ug/L	0.300		82.1	41-120			
Acenaphthene	0.241	0.003	0.010	ug/L	0.300		80.5	41-120			
Dibenzofuran	0.260	0.002	0.010	ug/L	0.300		86.6	38-120			
Fluorene	0.260	0.002	0.010	ug/L	0.300		86.8	43-120			



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Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKE0703 - EPA 3510C SepF

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKE0703-BS1)						Prepared: 27-May-2022 Analyzed: 21-Jun-2022 12:42					
Phenanthrene	0.246	0.001	0.010	ug/L	0.300		82.1	41-120			
Anthracene	0.266	0.001	0.010	ug/L	0.300		88.8	40-120			
Carbazole	0.274	0.001	0.010	ug/L	0.300		91.3	30-160			
Fluoranthene	0.278	0.002	0.010	ug/L	0.300		92.7	45-120			
Pyrene	0.280	0.001	0.010	ug/L	0.300		93.2	41-120			
Benzo(a)anthracene	0.294	0.0008	0.010	ug/L	0.300		98.0	42-120			
Chrysene	0.276	0.0009	0.010	ug/L	0.300		91.9	44-120			
Benzo(b)fluoranthene	0.262	0.0005	0.010	ug/L	0.300		87.4	44-120			
Benzo(k)fluoranthene	0.302	0.003	0.010	ug/L	0.300		101	50-120			
Benzo(j)fluoranthene	0.271	0.002	0.010	ug/L	0.300		90.4	39-160			
Benzofluoranthenes, Total	0.836	0.004	0.010	ug/L	0.900		92.9	46-120			
Benzo(a)pyrene	0.266	0.002	0.010	ug/L	0.300		88.6	35-120			
Perylene	0.242	0.006	0.010	ug/L	0.300		80.8	30-160			
Indeno(1,2,3-cd)pyrene	0.299	0.001	0.010	ug/L	0.300		99.6	37-120			
Dibenzo(a,h)anthracene	0.306	0.001	0.010	ug/L	0.300		102	34-120			
Benzo(g,h,i)perylene	0.286	0.001	0.010	ug/L	0.300		95.2	38-120			
Surrogate: 2-Methylnaphthalene-d10	0.236			ug/L	0.300		78.7	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.368			ug/L	0.300		123	29-120			* Q
Surrogate: Fluoranthene-d10	0.283			ug/L	0.300		94.4	57-120			

Matrix Spike (BKE0703-MS1)						Source: 22E0401-03 Prepared: 27-May-2022 Analyzed: 21-Jun-2022 14:19					
Naphthalene	0.282	0.001	0.011	ug/L	0.341	0.008	80.5	37-120			
2-Methylnaphthalene	0.292	0.001	0.011	ug/L	0.341	0.005	84.1	37-120			
1-Methylnaphthalene	0.291	0.001	0.011	ug/L	0.341	0.003	84.6	29-120			
Acenaphthylene	0.299	0.002	0.011	ug/L	0.341	ND	87.8	41-120			
Acenaphthene	0.511	0.003	0.011	ug/L	0.341	0.229	82.7	41-120			
Dibenzofuran	0.314	0.002	0.011	ug/L	0.341	0.002	91.4	38-120			
Fluorene	0.319	0.002	0.011	ug/L	0.341	ND	93.5	43-120			
Phenanthrene	0.307	0.001	0.011	ug/L	0.341	0.003	89.1	41-120			
Anthracene	0.342	0.001	0.011	ug/L	0.341	ND	100	40-120			
Carbazole	0.334	0.001	0.011	ug/L	0.341	ND	97.9	30-160			
Fluoranthene	0.340	0.002	0.011	ug/L	0.341	ND	99.7	45-120			
Pyrene	0.343	0.001	0.011	ug/L	0.341	0.001	100	41-120			
Benzo(a)anthracene	0.352	0.0009	0.011	ug/L	0.341	ND	103	42-120			
Chrysene	0.326	0.001	0.011	ug/L	0.341	ND	95.6	44-120			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKE0703 - EPA 3510C SepF

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKE0703-MS1)											
Source: 22E0401-03			Prepared: 27-May-2022			Analyzed: 21-Jun-2022 14:19					
Benzo(b)fluoranthene	0.302	0.0005	0.011	ug/L	0.341	ND	88.7	44-120			
Benzo(k)fluoranthene	0.353	0.004	0.011	ug/L	0.341	ND	103	50-120			
Benzo(j)fluoranthene	0.317	0.002	0.011	ug/L	0.341	ND	93.0	39-160			
Benzofluoranthenes, Total	0.972	0.004	0.011	ug/L	1.02	ND	95.1	46-120			
Benzo(a)pyrene	0.328	0.003	0.011	ug/L	0.341	ND	96.3	35-120			
Perylene	0.313	0.007	0.011	ug/L	0.341	ND	91.8	30-160			
Indeno(1,2,3-cd)pyrene	0.338	0.001	0.011	ug/L	0.341	ND	99.2	37-120			
Dibenzo(a,h)anthracene	0.346	0.002	0.011	ug/L	0.341	ND	102	34-120			
Benzo(g,h,i)perylene	0.323	0.002	0.011	ug/L	0.341	ND	94.9	38-120			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.282			ug/L	0.341	0.269	82.6	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.400			ug/L	0.341	0.417	117	29-120			Q
<i>Surrogate: Fluoranthene-d10</i>	0.332			ug/L	0.341	0.339	97.5	57-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKE0703-MSD1)											
Source: 22E0401-03			Prepared: 27-May-2022			Analyzed: 21-Jun-2022 14:52					
Naphthalene	0.273	0.002	0.011	ug/L	0.345	0.008	77.0	37-120	3.15	30	
2-Methylnaphthalene	0.283	0.001	0.011	ug/L	0.345	0.005	80.6	37-120	3.10	30	
1-Methylnaphthalene	0.291	0.001	0.011	ug/L	0.345	0.003	83.5	29-120	0.15	30	
Acenaphthylene	0.293	0.002	0.011	ug/L	0.345	ND	85.0	41-120	2.13	30	
Acenaphthene	0.498	0.003	0.011	ug/L	0.345	0.229	78.0	41-120	2.57	30	
Dibenzofuran	0.310	0.002	0.011	ug/L	0.345	0.002	89.2	38-120	1.20	30	
Fluorene	0.320	0.002	0.011	ug/L	0.345	ND	92.8	43-120	0.43	30	
Phenanthrene	0.300	0.001	0.011	ug/L	0.345	0.003	86.2	41-120	2.18	30	
Anthracene	0.332	0.001	0.011	ug/L	0.345	ND	96.3	40-120	3.05	30	
Carbazole	0.328	0.001	0.011	ug/L	0.345	ND	95.1	30-160	1.81	30	
Fluoranthene	0.333	0.002	0.011	ug/L	0.345	ND	96.6	45-120	2.01	30	
Pyrene	0.337	0.001	0.011	ug/L	0.345	0.001	97.4	41-120	1.72	30	
Benzo(a)anthracene	0.348	0.0009	0.011	ug/L	0.345	ND	101	42-120	1.13	30	
Chrysene	0.322	0.001	0.011	ug/L	0.345	ND	93.4	44-120	1.15	30	
Benzo(b)fluoranthene	0.300	0.0005	0.011	ug/L	0.345	ND	87.1	44-120	0.67	30	
Benzo(k)fluoranthene	0.352	0.004	0.011	ug/L	0.345	ND	102	50-120	0.23	30	
Benzo(j)fluoranthene	0.319	0.002	0.011	ug/L	0.345	ND	92.5	39-160	0.55	30	
Benzofluoranthenes, Total	0.971	0.004	0.011	ug/L	1.03	ND	93.9	46-120	0.11	30	
Benzo(a)pyrene	0.325	0.003	0.011	ug/L	0.345	ND	94.3	35-120	0.96	30	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 22-Jun-2022 18:27
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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKE0703 - EPA 3510C SepF

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKE0703-MSD1)		Source: 22E0401-03			Prepared: 27-May-2022		Analyzed: 21-Jun-2022 14:52				
Perylene	0.309	0.007	0.011	ug/L	0.345	ND	89.7	30-160	1.10	30	
Indeno(1,2,3-cd)pyrene	0.336	0.001	0.011	ug/L	0.345	ND	97.4	37-120	0.64	30	
Dibenzo(a,h)anthracene	0.344	0.002	0.011	ug/L	0.345	ND	99.8	34-120	0.58	30	
Benzo(g,h,i)perylene	0.324	0.002	0.011	ug/L	0.345	ND	93.9	38-120	0.15	30	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.272			ug/L	0.345	0.269	79.0	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.401			ug/L	0.345	0.417	116	29-120			Q
<i>Surrogate: Fluoranthene-d10</i>	0.329			ug/L	0.345	0.339	95.3	57-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 22-Jun-2022 18:27
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Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BKE0706 - EPA 3510C SepF

Instrument: FID4 Analyst: CTO

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0706-BLK1)		Prepared: 27-May-2022 Analyzed: 06-Jun-2022 20:21								
Diesel Range Organics (C12-C24)	ND	0.100	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L							U
<i>Surrogate: o-Terphenyl</i>	0.225		mg/L	0.225	100		50-150			
LCS (BKE0706-BS1)		Prepared: 27-May-2022 Analyzed: 06-Jun-2022 20:41								
Diesel Range Organics (C12-C24)	2.93	0.100	mg/L	3.00		97.8	56-120			
<i>Surrogate: o-Terphenyl</i>	0.207		mg/L	0.225	92.0		50-150			
LCS Dup (BKE0706-BSD1)		Prepared: 27-May-2022 Analyzed: 06-Jun-2022 21:01								
Diesel Range Organics (C12-C24)	3.24	0.100	mg/L	3.00		108	56-120	9.82	30	
<i>Surrogate: o-Terphenyl</i>	0.217		mg/L	0.225	96.6		50-150			
Matrix Spike (BKE0706-MS1)		Source: 22E0401-03		Prepared: 27-May-2022 Analyzed: 06-Jun-2022 21:21						
Diesel Range Organics (C12-C24)	2.94	0.100	mg/L	3.00	ND	97.9	56-120			
<i>Surrogate: o-Terphenyl</i>	0.202		mg/L	0.225	0.255	89.6	50-150			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKE0706-MSD1)		Source: 22E0401-03		Prepared: 27-May-2022 Analyzed: 06-Jun-2022 21:41						
Diesel Range Organics (C12-C24)	3.01	0.100	mg/L	3.00	ND	100	56-120	2.42	30	
<i>Surrogate: o-Terphenyl</i>	0.199		mg/L	0.225	0.255	88.6	50-150			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BKE0746 - EPA 3510C SepF

Instrument: ECD7 Analyst: JGR

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKE0746-BLK1)											
						Prepared: 27-May-2022 Analyzed: 20-Jun-2022 11:08					
Aroclor 1016	ND	0.002	0.010	ug/L							U
Aroclor 1221	ND	0.002	0.010	ug/L							U
Aroclor 1232	ND	0.002	0.010	ug/L							U
Aroclor 1242	ND	0.002	0.010	ug/L							U
Aroclor 1248	ND	0.002	0.010	ug/L							U
Aroclor 1254	ND	0.002	0.010	ug/L							U
Aroclor 1260	ND	0.003	0.010	ug/L							U
Aroclor 1262	ND	0.003	0.010	ug/L							U
Aroclor 1268	ND	0.003	0.010	ug/L							U
<i>Surrogate: Decachlorobiphenyl</i>	0.0159			ug/L	0.0200		79.7	29-120			
<i>Surrogate: Tetrachlorometaxylene</i>	0.0134			ug/L	0.0200		66.8	32-120			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0193			ug/L	0.0200		96.4	29-120			
<i>Surrogate: Tetrachlorometaxylene [2C]</i>	0.0126			ug/L	0.0200		63.1	32-120			
LCS (BKE0746-BS1)											
						Prepared: 27-May-2022 Analyzed: 20-Jun-2022 11:30					
Aroclor 1016	0.042	0.002	0.010	ug/L	0.0500		84.3	54-120			
Aroclor 1260 [2C]	0.047	0.003	0.010	ug/L	0.0500		93.2	51-128			
<i>Surrogate: Decachlorobiphenyl</i>	0.0155			ug/L	0.0200		77.5	29-120			
<i>Surrogate: Tetrachlorometaxylene</i>	0.0129			ug/L	0.0200		64.3	32-120			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0185			ug/L	0.0200		92.3	29-120			
<i>Surrogate: Tetrachlorometaxylene [2C]</i>	0.0120			ug/L	0.0200		59.8	32-120			
Matrix Spike (BKE0746-MS1)											
			Source: 22E0401-03			Prepared: 27-May-2022 Analyzed: 20-Jun-2022 12:35					
Aroclor 1016	0.040	0.002	0.010	ug/L	0.0500	ND	80.4	54-120			
Aroclor 1260	0.040	0.003	0.010	ug/L	0.0500	ND	80.0	51-128			
<i>Surrogate: Decachlorobiphenyl</i>	0.0147			ug/L	0.0200		73.6	29-120			
<i>Surrogate: Tetrachlorometaxylene</i>	0.0136			ug/L	0.0200		68.0	32-120			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0172			ug/L	0.0200		86.2	29-120			
<i>Surrogate: Tetrachlorometaxylene [2C]</i>	0.0129			ug/L	0.0200		64.7	32-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BKE0746-MSD1)											
			Source: 22E0401-03			Prepared: 27-May-2022 Analyzed: 20-Jun-2022 12:56					
Aroclor 1016	0.040	0.002	0.010	ug/L	0.0500	ND	79.4	54-120	1.24	30	
Aroclor 1260	0.040	0.003	0.010	ug/L	0.0500	ND	80.9	51-128	1.16	30	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 22-Jun-2022 18:27
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Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BKE0746 - EPA 3510C SepF

Instrument: ECD7 Analyst: JGR

QC Sample/Analyte	Detection Result	Reporting Limit	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKE0746-MSD1)		Source: 22E0401-03		Prepared: 27-May-2022		Analyzed: 20-Jun-2022 12:56					
Surrogate: Decachlorobiphenyl	0.0156			ug/L	0.0200		77.8	29-120			
Surrogate: Tetrachlorometaxylene	0.0131			ug/L	0.0200		65.5	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0180			ug/L	0.0200		89.8	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0124			ug/L	0.0200		62.1	32-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKF0109 - TWM EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKF0109-BLK1)						Prepared: 06-Jun-2022 Analyzed: 08-Jun-2022 11:31					
Mercury	ND	0.000013	0.000100	mg/L							U
LCS (BKF0109-BS1)						Prepared: 06-Jun-2022 Analyzed: 08-Jun-2022 11:34					
Mercury	0.00194	0.000013	0.000100	mg/L	0.00200		97.0	80-120			
Duplicate (BKF0109-DUP1)						Source: 22E0401-03 Prepared: 06-Jun-2022 Analyzed: 08-Jun-2022 11:38					
Mercury	0.000025	0.000013	0.000100	mg/L		0.000026			6.68	20	J
Matrix Spike (BKF0109-MS1)						Source: 22E0401-03 Prepared: 06-Jun-2022 Analyzed: 08-Jun-2022 11:41					
Mercury	0.00110	0.000013	0.000100	mg/L	0.00100	0.000026	107	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BKF0109-MSD1)						Source: 22E0401-03 Prepared: 06-Jun-2022 Analyzed: 08-Jun-2022 11:48					
Mercury	0.00107	0.000013	0.000100	mg/L	0.00100	0.000026	104	75-125	2.43	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKF0141 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKF0141-BLK2)						Prepared: 07-Jun-2022 Analyzed: 08-Jun-2022 15:57						
Thallium	205	ND	0.0234	0.200	ug/L							U
Selenium	78	ND	0.179	0.500	ug/L							U
LCS (BKF0141-BS2)						Prepared: 07-Jun-2022 Analyzed: 08-Jun-2022 16:03						
Thallium	205	24.8	0.0234	0.200	ug/L	25.0		99.3	80-120			
Selenium	78	81.0	0.179	0.500	ug/L	80.0		101	80-120			
Duplicate (BKF0141-DUP2)						Source: 22E0401-03 Prepared: 07-Jun-2022 Analyzed: 08-Jun-2022 22:32						
Thallium	205	ND	0.0234	0.200	ug/L		ND					U
Matrix Spike (BKF0141-MS2)						Source: 22E0401-03 Prepared: 07-Jun-2022 Analyzed: 08-Jun-2022 22:37						
Thallium	205	21.9	0.0234	0.200	ug/L	25.0	ND	87.4	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKF0141-MSD2)						Source: 22E0401-03 Prepared: 07-Jun-2022 Analyzed: 08-Jun-2022 22:43						
Thallium	205	22.0	0.0234	0.200	ug/L	25.0	ND	88.0	75-125	0.62	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKF0141-BLK1)						Prepared: 07-Jun-2022 Analyzed: 07-Jun-2022 17:39						
Antimony	121	ND	0.101	0.200	ug/L							U
Antimony	123	ND	0.102	0.200	ug/L							U
Beryllium	9	ND	0.0171	0.200	ug/L							U
Chromium	52	ND	0.260	0.500	ug/L							U
Chromium	53	ND	0.239	0.500	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Silver	107	ND	0.0220	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
Cadmium	111	ND	0.0300	0.100	ug/L							U
Cadmium	114	ND	0.0400	0.100	ug/L							U
Copper	63	ND	0.173	0.500	ug/L							U
Copper	65	ND	0.350	0.500	ug/L							U
Nickel	60	ND	0.0792	0.500	ug/L							U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKF0141 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKF0141-BLK1)												
						Prepared: 07-Jun-2022 Analyzed: 07-Jun-2022 17:39						
Nickel	62	ND	0.220	0.500	ug/L							U
Zinc	66	ND	2.92	6.00	ug/L							U
Zinc	67	ND	0.940	6.00	ug/L							U
LCS (BKF0141-BS1)												
						Prepared: 07-Jun-2022 Analyzed: 07-Jun-2022 17:44						
Antimony	121	26.2	0.101	0.200	ug/L	25.0		105	80-120			
Antimony	123	26.2	0.102	0.200	ug/L	25.0		105	80-120			
Beryllium	9	26.1	0.0171	0.200	ug/L	25.0		104	80-120			
Chromium	52	25.8	0.260	0.500	ug/L	25.0		103	80-120			
Chromium	53	25.3	0.239	0.500	ug/L	25.0		101	80-120			
Lead	208	27.2	0.0513	0.100	ug/L	25.0		109	80-120			
Silver	107	26.6	0.0220	0.200	ug/L	25.0		106	80-120			
Arsenic	75a	26.2	0.0373	0.200	ug/L	25.0		105	80-120			
Cadmium	111	25.6	0.0300	0.100	ug/L	25.0		103	80-120			
Cadmium	114	25.6	0.0400	0.100	ug/L	25.0		103	80-120			
Copper	63	26.5	0.173	0.500	ug/L	25.0		106	80-120			
Copper	65	26.6	0.350	0.500	ug/L	25.0		106	80-120			
Nickel	60	26.3	0.0792	0.500	ug/L	25.0		105	80-120			
Nickel	62	26.1	0.220	0.500	ug/L	25.0		104	80-120			
Zinc	66	86.2	2.92	6.00	ug/L	80.0		108	80-120			
Zinc	67	79.6	0.940	6.00	ug/L	80.0		99.5	80-120			
Duplicate (BKF0141-DUP1)												
			Source: 22E0401-03			Prepared: 07-Jun-2022 Analyzed: 07-Jun-2022 19:22						
Antimony	121	0.107	0.101	0.200	ug/L		0.221			69.50	20	L, J
Beryllium	9	ND	0.0171	0.200	ug/L		ND					U
Chromium	52	0.766	0.260	0.500	ug/L		0.736			3.99	20	
Lead	208	0.0920	0.0513	0.100	ug/L		0.0910			1.09	20	J
Silver	107	ND	0.0220	0.200	ug/L		ND					U
Arsenic	75a	0.191	0.0373	0.200	ug/L		0.198			3.60	20	J
Cadmium	111	ND	0.0300	0.100	ug/L		ND					U
Copper	63	0.222	0.173	0.500	ug/L		0.246			10.30	20	J
Nickel	60	0.159	0.0792	0.500	ug/L		0.132			18.60	20	J
Selenium	78	0.584	0.179	0.500	ug/L		0.501			15.30	20	
Zinc	66	ND	2.92	6.00	ug/L		ND					U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKF0141 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Detection Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKF0141-MS1)		Source: 22E0401-03			Prepared: 07-Jun-2022		Analyzed: 07-Jun-2022 19:27					
Antimony	121	24.6	0.101	0.200	ug/L	25.0	0.221	97.5	75-125			
Beryllium	9	21.1	0.0171	0.200	ug/L	25.0	ND	84.5	75-125			
Chromium	52	21.4	0.260	0.500	ug/L	25.0	0.736	82.6	75-125			
Lead	208	22.0	0.0513	0.100	ug/L	25.0	0.0910	87.4	75-125			
Silver	107	22.5	0.0220	0.200	ug/L	25.0	ND	89.9	75-125			
Arsenic	75a	24.5	0.0373	0.200	ug/L	25.0	0.198	97.2	75-125			
Cadmium	111	22.2	0.0300	0.100	ug/L	25.0	ND	88.7	75-125			
Copper	63	23.3	0.173	0.500	ug/L	25.0	0.246	92.2	75-125			
Nickel	60	24.3	0.0792	0.500	ug/L	25.0	0.132	96.8	75-125			
Selenium	78	75.3	0.179	0.500	ug/L	80.0	0.501	93.5	75-125			
Zinc	66	68.2	2.92	6.00	ug/L	80.0	ND	85.2	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKF0141-MSD1)		Source: 22E0401-03			Prepared: 07-Jun-2022		Analyzed: 07-Jun-2022 19:33					
Antimony	121	25.2	0.101	0.200	ug/L	25.0	0.221	99.8	75-125	2.27	20	
Beryllium	9	21.7	0.0171	0.200	ug/L	25.0	ND	86.8	75-125	2.72	20	
Chromium	52	21.8	0.260	0.500	ug/L	25.0	0.736	84.2	75-125	1.84	20	
Lead	208	22.9	0.0513	0.100	ug/L	25.0	0.0910	91.2	75-125	4.20	20	
Silver	107	23.1	0.0220	0.200	ug/L	25.0	ND	92.4	75-125	2.75	20	
Arsenic	75a	25.1	0.0373	0.200	ug/L	25.0	0.198	99.6	75-125	2.40	20	
Cadmium	111	22.1	0.0300	0.100	ug/L	25.0	ND	88.2	75-125	0.59	20	
Copper	63	24.1	0.173	0.500	ug/L	25.0	0.246	95.3	75-125	3.29	20	
Nickel	60	24.4	0.0792	0.500	ug/L	25.0	0.132	97.1	75-125	0.26	20	
Selenium	78	77.4	0.179	0.500	ug/L	80.0	0.501	96.2	75-125	2.78	20	
Zinc	66	68.9	2.92	6.00	ug/L	80.0	ND	86.1	75-125	1.09	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKF0199 - TWM EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKF0199-BLK1)						Prepared: 08-Jun-2022 Analyzed: 13-Jun-2022 14:33					
Mercury	0.000045	0.000013	0.000100	mg/L							J
LCS (BKF0199-BS1)						Prepared: 08-Jun-2022 Analyzed: 13-Jun-2022 14:35					
Mercury	0.00170	0.000013	0.000100	mg/L	0.00200		84.9	80-120			
Duplicate (BKF0199-DUP1)						Source: 22E0401-01 Prepared: 08-Jun-2022 Analyzed: 13-Jun-2022 14:42					
Mercury	0.000048	0.000013	0.000100	mg/L		0.000047			2.54	20	J
Matrix Spike (BKF0199-MS1)						Source: 22E0401-01 Prepared: 08-Jun-2022 Analyzed: 13-Jun-2022 14:45					
Mercury	0.000874	0.000013	0.000100	mg/L	0.00100	0.000047	82.7	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BKF0199-MSD1)						Source: 22E0401-01 Prepared: 08-Jun-2022 Analyzed: 13-Jun-2022 14:47					
Mercury	0.000895	0.000013	0.000100	mg/L	0.00100	0.000047	84.8	75-125	2.36	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKF0139 - TWM EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKF0139-BLK1)						Prepared: 07-Jun-2022 Analyzed: 08-Jun-2022 13:19					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L							U
LCS (BKF0139-BS1)						Prepared: 07-Jun-2022 Analyzed: 08-Jun-2022 13:21					
Mercury, Dissolved	0.00199	0.000013	0.000100	mg/L	0.00200		99.4	80-120			
Duplicate (BKF0139-DUP1)						Source: 22E0401-16 Prepared: 07-Jun-2022 Analyzed: 08-Jun-2022 13:26					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L		ND					U
Matrix Spike (BKF0139-MS1)						Source: 22E0401-16 Prepared: 07-Jun-2022 Analyzed: 08-Jun-2022 13:28					
Mercury, Dissolved	0.000813	0.000013	0.000100	mg/L	0.00100	ND	81.3	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BKF0139-MSD1)						Source: 22E0401-16 Prepared: 07-Jun-2022 Analyzed: 08-Jun-2022 13:30					
Mercury, Dissolved	0.000994	0.000013	0.000100	mg/L	0.00100	ND	99.4	75-125	20.00	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKF0196 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKF0196-BLK1)												
						Prepared: 08-Jun-2022 Analyzed: 08-Jun-2022 20:17						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Antimony, Dissolved	123	ND	0.102	0.200	ug/L							U
Beryllium, Dissolved	9	ND	0.0171	0.200	ug/L							U
Chromium, Dissolved	52	ND	0.260	0.500	ug/L							U
Chromium, Dissolved	53	ND	0.239	0.500	ug/L							U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L							U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L							U
Cadmium, Dissolved	114	ND	0.0400	0.100	ug/L							U
Copper, Dissolved	63	ND	0.173	0.500	ug/L							U
Copper, Dissolved	65	ND	0.350	0.500	ug/L							U
Nickel, Dissolved	60	ND	0.0792	0.500	ug/L							U
Nickel, Dissolved	62	ND	0.220	0.500	ug/L							U
Selenium, Dissolved	78	ND	0.179	0.500	ug/L							U
Zinc, Dissolved	66	ND	2.92	6.00	ug/L							U
Zinc, Dissolved	67	ND	0.940	6.00	ug/L							U

LCS (BKF0196-BS1)

Prepared: 08-Jun-2022 Analyzed: 08-Jun-2022 20:22

Antimony, Dissolved	121	25.3	0.101	0.200	ug/L	25.0		101	80-120
Antimony, Dissolved	123	25.1	0.102	0.200	ug/L	25.0		100	80-120
Beryllium, Dissolved	9	24.4	0.0171	0.200	ug/L	25.0		97.8	80-120
Chromium, Dissolved	52	25.0	0.260	0.500	ug/L	25.0		100	80-120
Chromium, Dissolved	53	25.4	0.239	0.500	ug/L	25.0		102	80-120
Lead, Dissolved	208	25.3	0.0513	0.100	ug/L	25.0		101	80-120
Silver, Dissolved	107	27.4	0.0220	0.200	ug/L	25.0		110	80-120
Thallium, Dissolved	205	24.8	0.0234	0.200	ug/L	25.0		99.3	80-120
Arsenic, Dissolved	75a	25.0	0.0373	0.200	ug/L	25.0		100	80-120
Cadmium, Dissolved	111	25.8	0.0300	0.100	ug/L	25.0		103	80-120
Cadmium, Dissolved	114	25.8	0.0400	0.100	ug/L	25.0		103	80-120
Copper, Dissolved	63	26.5	0.173	0.500	ug/L	25.0		106	80-120
Copper, Dissolved	65	26.6	0.350	0.500	ug/L	25.0		107	80-120
Nickel, Dissolved	60	25.8	0.0792	0.500	ug/L	25.0		103	80-120
Nickel, Dissolved	62	25.5	0.220	0.500	ug/L	25.0		102	80-120



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKF0196 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKF0196-BS1)						Prepared: 08-Jun-2022 Analyzed: 08-Jun-2022 20:22						
Selenium, Dissolved	78	82.6	0.179	0.500	ug/L	80.0		103	80-120			
Zinc, Dissolved	66	83.8	2.92	6.00	ug/L	80.0		105	80-120			
Zinc, Dissolved	67	82.2	0.940	6.00	ug/L	80.0		103	80-120			

Duplicate (BKF0196-DUP1)						Source: 22E0401-02 Prepared: 08-Jun-2022 Analyzed: 08-Jun-2022 23:00						
Antimony, Dissolved	121	0.154	0.101	0.200	ug/L	0.166				7.50	20	J
Beryllium, Dissolved	9	0.0190	0.0171	0.200	ug/L	0.0230				19.00	20	J
Chromium, Dissolved	52	ND	0.260	0.500	ug/L	0.414						U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L	ND						U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L	ND						U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L	ND						U
Arsenic, Dissolved	75a	1.58	0.0373	0.200	ug/L	1.52				4.20	20	
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L	ND						U
Copper, Dissolved	63	1.19	0.173	0.500	ug/L	1.23				2.81	20	
Nickel, Dissolved	60	1.71	0.0792	0.500	ug/L	1.81				5.57	20	
Selenium, Dissolved	78	0.230	0.179	0.500	ug/L	0.336				37.50	20	L, J
Zinc, Dissolved	66	ND	2.92	6.00	ug/L	ND						U

Matrix Spike (BKF0196-MS1)						Source: 22E0401-02 Prepared: 08-Jun-2022 Analyzed: 08-Jun-2022 23:05						
Antimony, Dissolved	121	25.8	0.101	0.200	ug/L	25.0	0.166	102	75-125			
Beryllium, Dissolved	9	24.5	0.0171	0.200	ug/L	25.0	0.0230	97.8	75-125			
Chromium, Dissolved	52	21.8	0.260	0.500	ug/L	25.0	0.414	85.5	75-125			
Lead, Dissolved	208	23.8	0.0513	0.100	ug/L	25.0	ND	95.0	75-125			
Silver, Dissolved	107	24.4	0.0220	0.200	ug/L	25.0	ND	97.6	75-125			
Thallium, Dissolved	205	23.6	0.0234	0.200	ug/L	25.0	ND	94.6	75-125			
Arsenic, Dissolved	75a	27.4	0.0373	0.200	ug/L	25.0	1.52	104	75-125			
Cadmium, Dissolved	111	24.9	0.0300	0.100	ug/L	25.0	ND	99.5	75-125			
Copper, Dissolved	63	26.4	0.173	0.500	ug/L	25.0	1.23	101	75-125			
Nickel, Dissolved	60	27.3	0.0792	0.500	ug/L	25.0	1.81	102	75-125			
Selenium, Dissolved	78	80.3	0.179	0.500	ug/L	80.0	0.336	100	75-125			
Zinc, Dissolved	66	79.3	2.92	6.00	ug/L	80.0	ND	99.1	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKF0196-MSD1)						Source: 22E0401-02 Prepared: 08-Jun-2022 Analyzed: 08-Jun-2022 23:12						
Antimony, Dissolved	121	26.0	0.101	0.200	ug/L	25.0	0.166	104	75-125	1.06	20	



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKF0196 - REN EPA 600/4-79-020 4.1.4 HNO3 matrix

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKF0196-MSD1)		Source: 22E0401-02			Prepared: 08-Jun-2022		Analyzed: 08-Jun-2022 23:12					
Beryllium, Dissolved	9	24.8	0.0171	0.200	ug/L	25.0	0.0230	99.1	75-125	1.33	20	
Chromium, Dissolved	52	21.9	0.260	0.500	ug/L	25.0	0.414	86.0	75-125	0.57	20	
Lead, Dissolved	208	23.6	0.0513	0.100	ug/L	25.0	ND	94.5	75-125	0.52	20	
Silver, Dissolved	107	25.4	0.0220	0.200	ug/L	25.0	ND	102	75-125	4.07	20	
Thallium, Dissolved	205	23.7	0.0234	0.200	ug/L	25.0	ND	94.9	75-125	0.32	20	
Arsenic, Dissolved	75a	27.5	0.0373	0.200	ug/L	25.0	1.52	104	75-125	0.15	20	
Cadmium, Dissolved	111	25.3	0.0300	0.100	ug/L	25.0	ND	101	75-125	1.56	20	
Copper, Dissolved	63	26.1	0.173	0.500	ug/L	25.0	1.23	99.7	75-125	1.05	20	
Nickel, Dissolved	60	26.9	0.0792	0.500	ug/L	25.0	1.81	100	75-125	1.39	20	
Selenium, Dissolved	78	81.7	0.179	0.500	ug/L	80.0	0.336	102	75-125	1.71	20	
Zinc, Dissolved	66	80.1	2.92	6.00	ug/L	80.0	ND	100	75-125	0.97	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Silver-107	WADOE,WA-DW,DoD-ELAP,NELAP
Beryllium-9	NELAP,WADOE,DoD-ELAP
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-53	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
Antimony-121	NELAP,WADOE,DoD-ELAP
Antimony-123	NELAP
Thallium-205	WADOE,WA-DW,DoD-ELAP,NELAP
Silver-107	WA-DW,DoD-ELAP,NELAP
Beryllium-9	WADOE,DoD-ELAP,NELAP
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-53	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
Antimony-121	NELAP,WADOE,DoD-ELAP
Antimony-123	NELAP,WADOE,DoD-ELAP
Thallium-205	NELAP,WADOE,DoD-ELAP
EPA 6020B UCT-KED in Water	
Arsenic-75a	WADOE,WA-DW,DoD-ELAP,ADEC,NELAP
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Copper-63	NELAP,WADOE,DoD-ELAP
Copper-65	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Nickel-62	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP
Zinc-66	WADOE,WA-DW,DoD-ELAP
Zinc-67	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Copper-63	NELAP,WADOE,DoD-ELAP
Copper-65	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Nickel-62	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP



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Zinc-66 NELAP,WADOE,DoD-ELAP
Zinc-67 NELAP,WADOE,DoD-ELAP

EPA 7470A in Water

Mercury WADOE,NELAP,DoD-ELAP
Mercury WADOE,NELAP,DoD-ELAP

EPA 8082A in Water

Aroclor 1016 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1016 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 [2C] WADOE,DoD-ELAP,NELAP,ADEC

EPA 8260D in Water

Chloromethane DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane DoD-ELAP,ADEC,NELAP,WADOE
Acrolein DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane DoD-ELAP,ADEC,NELAP,WADOE
Acetone DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane DoD-ELAP,NELAP,WADOE
Methylene Chloride DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile DoD-ELAP,NELAP,WADOE
Carbon Disulfide DoD-ELAP,NELAP,WADOE



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trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE



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Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA 8270E in Water

Phenol	NELAP,DoD-ELAP
bis(2-chloroethyl) ether	NELAP,DoD-ELAP
2-Chlorophenol	NELAP,DoD-ELAP
1,3-Dichlorobenzene	NELAP,DoD-ELAP
1,4-Dichlorobenzene	NELAP,DoD-ELAP
1,2-Dichlorobenzene	NELAP,DoD-ELAP
Benzyl Alcohol	NELAP,DoD-ELAP
2,2'-Oxybis(1-chloropropane)	NELAP,DoD-ELAP
2-Methylphenol	NELAP,DoD-ELAP
Hexachloroethane	NELAP,DoD-ELAP
N-Nitroso-di-n-Propylamine	NELAP,DoD-ELAP
4-Methylphenol	NELAP,DoD-ELAP
Nitrobenzene	NELAP,DoD-ELAP
Isophorone	NELAP,DoD-ELAP
2-Nitrophenol	NELAP,DoD-ELAP
2,4-Dimethylphenol	NELAP,DoD-ELAP



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Bis(2-Chloroethoxy)methane	NELAP,DoD-ELAP
2,4-Dichlorophenol	NELAP,DoD-ELAP
1,2,4-Trichlorobenzene	NELAP,DoD-ELAP
Naphthalene	NELAP,DoD-ELAP
Benzoic acid	NELAP,DoD-ELAP
4-Chloroaniline	NELAP,DoD-ELAP
Hexachlorobutadiene	NELAP,DoD-ELAP
4-Chloro-3-Methylphenol	NELAP,DoD-ELAP
2-Methylnaphthalene	NELAP,DoD-ELAP
Hexachlorocyclopentadiene	NELAP,DoD-ELAP
2,4,6-Trichlorophenol	NELAP,DoD-ELAP
2,4,5-Trichlorophenol	NELAP,DoD-ELAP
2-Chloronaphthalene	NELAP,DoD-ELAP
2-Nitroaniline	NELAP,DoD-ELAP
Acenaphthylene	NELAP,DoD-ELAP
Dimethylphthalate	NELAP,DoD-ELAP
2,6-Dinitrotoluene	NELAP,DoD-ELAP
Acenaphthene	NELAP,DoD-ELAP
3-Nitroaniline	NELAP,DoD-ELAP
2,4-Dinitrophenol	NELAP,DoD-ELAP
Dibenzofuran	NELAP,DoD-ELAP
4-Nitrophenol	NELAP,DoD-ELAP
2,4-Dinitrotoluene	NELAP,DoD-ELAP
Fluorene	NELAP,DoD-ELAP
4-Chlorophenylphenyl ether	NELAP,DoD-ELAP
Diethyl phthalate	NELAP,DoD-ELAP
4-Nitroaniline	NELAP,DoD-ELAP
4,6-Dinitro-2-methylphenol	NELAP,DoD-ELAP
N-Nitrosodiphenylamine	NELAP,DoD-ELAP
4-Bromophenyl phenyl ether	NELAP,DoD-ELAP
Hexachlorobenzene	NELAP,DoD-ELAP
Pentachlorophenol	NELAP,DoD-ELAP
Phenanthrene	NELAP,DoD-ELAP
Anthracene	NELAP,DoD-ELAP
Carbazole	NELAP,DoD-ELAP
Di-n-Butylphthalate	NELAP,DoD-ELAP
Fluoranthene	NELAP,DoD-ELAP
Pyrene	NELAP,DoD-ELAP
Butylbenzylphthalate	NELAP,DoD-ELAP



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Benzo(a)anthracene	NELAP,DoD-ELAP
3,3'-Dichlorobenzidine	NELAP,DoD-ELAP
Chrysene	NELAP,DoD-ELAP
bis(2-Ethylhexyl)phthalate	NELAP,DoD-ELAP
Di-n-Octylphthalate	NELAP,DoD-ELAP
Benzo(b)fluoranthene	NELAP,DoD-ELAP
Benzo(k)fluoranthene	NELAP,DoD-ELAP
Benzo(a)pyrene	NELAP,DoD-ELAP
Indeno(1,2,3-cd)pyrene	NELAP,DoD-ELAP
Dibenzo(a,h)anthracene	NELAP,DoD-ELAP
Benzo(g,h,i)perylene	NELAP,DoD-ELAP
N-Nitrosodimethylamine	NELAP,DoD-ELAP
1-Methylnaphthalene	NELAP,DoD-ELAP

EPA 8270E-SIM in Water

Naphthalene	ADEC,DoD-ELAP,NELAP,WADOE
2-Methylnaphthalene	ADEC,DoD-ELAP,NELAP
1-Methylnaphthalene	ADEC,DoD-ELAP,NELAP,WADOE
Biphenyl	NELAP
Acenaphthylene	ADEC,DoD-ELAP,NELAP,WADOE
Acenaphthene	ADEC,DoD-ELAP,NELAP,WADOE
Dibenzofuran	ADEC,DoD-ELAP,NELAP
Fluorene	ADEC,DoD-ELAP,NELAP,WADOE
Phenanthrene	ADEC,DoD-ELAP,NELAP,WADOE
Anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Carbazole	NELAP
Fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(a)anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Chrysene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(b)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(k)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(j)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(e)pyrene	NELAP
Benzo(a)pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Perylene	ADEC,NELAP
Indeno(1,2,3-cd)pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Dibenzo(a,h)anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(g,h,i)perylene	ADEC,DoD-ELAP,NELAP,WADOE



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

NWTPH-Dx in Water

Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2022
WA-DW	Ecology - Drinking Water	C558	06/30/2022



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
22-Jun-2022 18:27

Notes and Definitions

- * Flagged value is not within established control limits.
- D The reported value is from a dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- J Estimated concentration value detected below the reporting limit.
- L Analyte concentration is ≤ 5 times the reporting limit and the replicate control limit defaults to \pm RL instead of 20% RPD
- P The reported value is greater than 25% difference between the concentrations determined on two GC columns where applicable.
- P1 The reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ($< 20\%$ RSD, $< 20\%$ drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants

07 September 2022

Zanna Satterwhite
Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle, WA 98104

RE: West Duwamish CSO (150218)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
22H0305

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Shelly Fishel, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)
 www.arilabs.com

ARI Assigned Number: 22H0305	Turn-around Requested: Standard	Page: 1 of 1
ARI Client Company: Aspect consulting	Phone:	Date: 8/17/22
Client Contact: Zanna Saterwhite		Ice Present? <input type="checkbox"/>
Client Project Name: West Duwamish CSO		No. of Coolers:
Client Project #: 150218	Samplers: Ashley Provow Favour Epura	Cooler Temps:

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested								Notes/Comments
					NWTPH Gx	NWTPH Dx	Metals EPA 200.7/200.8 2020A	Dissolved Metals (field filtered)	SVOCS	VOCs	EPA 4200	SEM/PAH-LL 8230D	
MMW-5-220817	8/17/22	1215	W	17	X	X	X	X	X	X	X	X	→ run analyzers HOLD congeners
MMW-3-220817	↓	1300	W	17	X	X	X	X	X	X	X	X	→ run analyzers HOLD congeners
Comments/Special Instructions Metals - Arsenic, Chromium, copper, lead, nickel, zinc Mercury EPA 7470 1245.1	Relinquished by: (Signature) <i>Ashley Provow</i>	Received by: (Signature) <i>Hannah Neuberger</i>	Relinquished by: (Signature)	Received by: (Signature)									
	Printed Name: Ashley Provow	Printed Name: Hannah Neuberger	Printed Name:	Printed Name:									
	Company: Aspect	Company: ARI	Company:	Company:									
	Date & Time: 8/17/22 1504	Date & Time: 8/17/22 15:06	Date & Time:	Date & Time:									

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: _____ Turn-around Requested: Standard Page: _____ of _____

ARI Client Company: Aspect Consulting Phone: _____ Date: _____ Ice Present? _____

Client Contact: Patricia Saterwhite No. of Coolers: _____ Cooler Temps: _____

Client Project Name: West Duwamish CSO

Client Project #: 150218 Samplers: Ashley Pinnow / Faouzi Fung



Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)
 www.arilabs.com

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested										Notes/Comments
					NAPTH Gx	NAPTH Dg	Metals EPA 200.7/200.8/200.9	Disinfectant Residuals (Total Filtered)	SNOGS	VHUS	EPA 4200	SIM PAH-LL 8210D	PUR LL		
MM-5-220817	9/17/22	1215	W	17	X	X	X	X	X	X	X	X	X	X	run and clors HOLD containers
MM-5-220817	↓	1300	W	17	X	X	X	X	X	X	X	X	X	X	run and clors HOLD containers

Add Trip Blank. Run for VOCs and TPH-Gx only

antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc

Comments/Special Instructions: Metals - Arsenic, chromium, copper, lead, nickel, zinc Mercury EPA 7470/245.1

Relinquished by: _____ Received by: _____
 (Signature) (Signature)

Printed Name: _____ Printed Name: _____

Company: _____ Company: _____

Date & Time: _____ Date & Time: _____

Limit of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program and the liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for the services. ARI shall not be liable for any damage to property or personal injury, including reasonable attorney's fees, arising out of or in connection with the requested services, not withstanding any provision to the contrary in any contract, purchase order or other document.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-5-220817	22H0305-01	Water	17-Aug-2022 12:15	17-Aug-2022 15:06
MW-5-220817	22H0305-02	Water	17-Aug-2022 12:15	17-Aug-2022 15:06
MW-3-220817	22H0305-03	Water	17-Aug-2022 13:10	17-Aug-2022 15:06
MW-3-220817	22H0305-04	Water	17-Aug-2022 13:10	17-Aug-2022 15:06
TRIP BLANKS	22H0305-05	Water	17-Aug-2022 12:15	17-Aug-2022 15:06



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

Work Order Case Narrative

Client: Aspect Consulting, LLC.
Project: West Duwamish CSO
Project Number: 150218
Work Order: 22H0305

Sample receipt

Sample(s) as listed on the preceding page were received 17-Aug-2022 15:06 under ARI work order 22H0305. For details regarding sample receipt, please refer to the Cooler Receipt Form.

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except Acrolein which was out of control low. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries were within control limits. The BS/BSD relative percent difference (RPD) were within control limits except Acetone and has been flagged.

Semivolatiles - EPA Method SW8270E



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except as follows. In association with sample 22H0305-01, 4-Bromophenyl phenyl ether, 4-Nitrophenol, Di-n-Butylphthalate, Hexachlorocyclopentadiene and Pentachlorophenol which were out of control low and 2-Nitroaniline, N-Nitroso-di-n-Propylamine, Phenol and surrogate Phenol-d5 which were out of control high in the initial calibration verification SKI0022. In association with sample 22H0305-03, 4-Bromophenyl phenyl ether, 4-Nitrophenol, Hexachlorocyclopentadiene, Pentachlorophenol and Pyrene which were out of control low and, 2-Nitroaniline, N-Nitroso-di-n-Propylamine, Phenol and surrogates 2,4,6-Tribromophenol and Phenol-d5 which were out of control high in the initial calibration verification SKI0025. All samples which contain analyte have been flagged with a "Q" qualifier

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except surrogate Phenol-d5 which were out of control high in the initial calibration verification SKI0022 and surrogates 2,4,6-Tribromophenol and Phenol-d5 which were out of control high in the initial calibration verification SKI0025. Deviations have been flagged.

The method blank(s) were clean at the reporting limits except bis(2-Ethylhexyl) Phthalate. All samples which contain analyte have been flagged with a "B" qualifier.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits except as flagged.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270E-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Total and Dissolved Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

Total and Dissolved Mercury - EPA Method 7470

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.



WORK ORDER

22H0305

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

Preservation Confirmation

Container ID	Container Type	pH
22H0305-01 A	Glass NM, Amber, 1000 mL	
22H0305-01 B	Glass NM, Amber, 1000 mL	
22H0305-01 C	Glass NM, Amber, 500 mL	
22H0305-01 D	Glass NM, Amber, 500 mL	
22H0305-01 E	Glass NM, Amber, 500 mL	
22H0305-01 F	Glass NM, Amber, 500 mL	
22H0305-01 G	Glass NM, Amber, 500 mL	
22H0305-01 H	Glass NM, Amber, 500 mL	
22H0305-01 I	Glass NM, Amber, 500 mL	
22H0305-01 J	Glass NM, Amber, 500 mL	
22H0305-01 K	HDPE NM, 500 mL, 1:1 HNO3	22 pass
22H0305-01 L	VOA Vial, Amber, 40 mL, HCL	
22H0305-01 M	VOA Vial, Amber, 40 mL, HCL	
22H0305-01 N	VOA Vial, Amber, 40 mL, HCL	
22H0305-01 O	VOA Vial, Amber, 40 mL, HCL	
22H0305-02 A	HDPE NM, 500 mL (FF)	22 pass
22H0305-03 A	Glass NM, Amber, 1000 mL	
22H0305-03 B	Glass NM, Amber, 1000 mL	
22H0305-03 C	Glass NM, Amber, 500 mL	
22H0305-03 D	Glass NM, Amber, 500 mL	
22H0305-03 E	Glass NM, Amber, 500 mL	
22H0305-03 F	Glass NM, Amber, 500 mL	
22H0305-03 G	Glass NM, Amber, 500 mL	
22H0305-03 H	Glass NM, Amber, 500 mL	
22H0305-03 I	Glass NM, Amber, 500 mL	
22H0305-03 J	Glass NM, Amber, 500 mL	
22H0305-03 K	HDPE NM, 500 mL, 1:1 HNO3	22 pass
22H0305-03 L	VOA Vial, Amber, 40 mL, HCL	
22H0305-03 M	VOA Vial, Amber, 40 mL, HCL	
22H0305-03 N	VOA Vial, Amber, 40 mL, HCL	
22H0305-03 O	VOA Vial, Amber, 40 mL, HCL	
22H0305-03 P	VOA Vial, Amber, 40 mL, HCL	
22H0305-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	22 pass
22H0305-05 A	VOA Vial, Amber, 40 mL, HCL	



WORK ORDER

22H0305

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

22110305-05 B VOA Vial, Amber, 40 mL, HCL

BURPLE

22110305-05 C VOA Vial, Amber, 40 mL, HCL

LP

8/17/22

Preservation Confirmed By

Date



Cooler Receipt Form

ARI Client: Aspect

Project Name: W DeWamish

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 22H0305

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time _____

2.6 1.6

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: 9708

Cooler Accepted by: HW

Date: 08/17/22

Time: 15:06

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

How were bottles sealed in plastic bags? Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO EB

Did all bottle labels and tags agree with custody papers? YES NO 8/17/22

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI: _____ NA 7/28/22

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: LP Date: 8/17/22 Time: 1542 Labels checked by: _____

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

MW-5-220817 received 5 vials
1 was empty.

By: LP Date: 8/17/22

VOC vials w/air
bubbles annotated
on pres sheet.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

MW-5-220817
22H0305-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/17/2022 12:15

Instrument: NT3 Analyst: LH

Analyzed: 08/18/2022 13:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKH0439
Prepared: 08/18/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22H0305-01 L

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	7.68	ug/L	M
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.13	ug/L	J



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

MW-5-220817
22H0305-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/17/2022 12:15

Instrument: NT3 Analyst: LH

Analyzed: 08/18/2022 13:29

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

MW-5-220817
22H0305-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/17/2022 12:15

Instrument: NT3 Analyst: LH

Analyzed: 08/18/2022 13:29

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	104	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	103	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	92.5	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	102	%	



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MW-5-220817
22H0305-01 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 08/17/2022 12:15
Instrument: NT3 Analyst: LH Analyzed: 08/18/2022 13:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22H0305-01 L
Preparation Batch: BKH0439 Sample Size: 10 mL
Prepared: 08/18/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	103	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	92.5	%	



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Reported:
07-Sep-2022 17:52

MW-5-220817
22H0305-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/17/2022 12:15

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 23:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0447
Prepared: 08/22/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22H0305-01 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

MW-5-220817
22H0305-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/17/2022 12:15

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 23:14

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	48.8 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	31.4 %	Q
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	68.4 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	58.5 %	
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	90.2 %	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

MW-5-220817
22H0305-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/17/2022 12:15

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 23:14

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	75.2	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	107	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	87.0	%	



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MW-5-220817
22H0305-01 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 08/17/2022 12:15
Instrument: NT18 Analyst: VTS Analyzed: 09/03/2022 12:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22H0305-01 E 01
Preparation Batch: BKH0446 Sample Size: 500 mL
Prepared: 08/23/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22H0305-01 E 01
Cleanup Batch: CKI0019 Initial Volume: 0.5 uL
Cleaned: 02-Sep-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.003	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.001	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.002	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 56.5 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 76.5 %
Surrogate: Fluoranthene-d10 57-120 % 72.5 %



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MW-5-220817
22H0305-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 08/17/2022 12:15
Instrument: FID4 Analyst: AA Analyzed: 08/31/2022 19:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22H0305-01 C 01
Preparation Batch: BKH0437 Sample Size: 500 mL
Prepared: 08/22/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24) HC ID: DRO	DRO	1	0.100	0.115	mg/L	
Motor Oil Range Organics (C24-C38) HC ID: MOTOR OIL	RRO	1	0.200	0.202	mg/L	
<i>Surrogate: o-Terphenyl</i>			50-150 %	116	%	



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MW-5-220817
22H0305-01 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 08/17/2022 12:15
Instrument: ECD7 Analyst: JGR Analyzed: 08/20/2022 19:01

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKH0435 Prepared: 08/18/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22H0305-01 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKH0157 Cleaned: 19-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0305-01 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKH0156 Cleaned: 19-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0305-01 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKH0158 Cleaned: 19-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0305-01 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	70.8	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	63.8	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	74.3	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	61.6	%



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MW-5-220817
22H0305-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 08/17/2022 12:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/26/2022 00:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0305-01 K 01
Preparation Batch: BKH0656 Sample Size: 25 mL
Prepared: 08/25/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	0.103	ug/L	J
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	0.135	ug/L	
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

MW-5-220817
22H0305-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 08/17/2022 12:15

Instrument: ICPMS1 Analyst: MCB

Analyzed: 08/26/2022 00:34

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22H0305-01 K 01

Preparation Batch: BKH0656

Sample Size: 25 mL

Prepared: 08/25/2022

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.36	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	1.90	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	1.70	ug/L	
Selenium	7782-49-2	1	0.179	0.500	0.200	ug/L	J
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-5-220817
22H0305-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 08/17/2022 12:15
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0305-01 K
Preparation Batch: BKH0730 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-5-220817
22H0305-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 08/17/2022 12:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 06:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0305-02 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.144	ug/L	J
Chromium, Dissolved	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	0.0870	ug/L	J
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 08/31/2022 22:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0305-02 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U



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MW-5-220817
22H0305-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 08/17/2022 12:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 06:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0305-02 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.25	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	0.0800	ug/L	J
Copper, Dissolved	7440-50-8	1	0.173	0.500	1.89	ug/L	
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	1.72	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.304	ug/L	J
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-5-220817
22H0305-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 08/17/2022 12:15
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0305-02 A
Preparation Batch: BKH0731 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-3-220817
22H0305-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/17/2022 13:10

Instrument: NT3 Analyst: LH

Analyzed: 08/18/2022 13:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKH0439
Prepared: 08/18/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22H0305-03 L

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.15	ug/L	J



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-3-220817
22H0305-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/17/2022 13:10

Instrument: NT3 Analyst: LH

Analyzed: 08/18/2022 13:51

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-3-220817
22H0305-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/17/2022 13:10

Instrument: NT3 Analyst: LH

Analyzed: 08/18/2022 13:51

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	108	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	98.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	102	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	106	%	



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MW-3-220817
22H0305-03 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 08/17/2022 13:10
Instrument: NT3 Analyst: LH Analyzed: 08/18/2022 13:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22H0305-03 L
Preparation Batch: BKH0439 Sample Size: 10 mL
Prepared: 08/18/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	102	%	



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Project Number: 150218
Project Manager: Zanna Satterwhite

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MW-3-220817
22H0305-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/17/2022 13:10

Instrument: NT10 Analyst: VTS

Analyzed: 08/31/2022 03:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0447
Prepared: 08/22/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22H0305-03 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-3-220817
22H0305-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/17/2022 13:10

Instrument: NT10 Analyst: VTS

Analyzed: 08/31/2022 03:48

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	0.2	ug/L	
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	0.9	ug/L	
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	53.8	%
<i>Surrogate: Phenol-d5</i>					30-160 %	34.3	%
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	76.1	%
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	61.8	%
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	103	%



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MW-3-220817
22H0305-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 08/17/2022 13:10
Instrument: NT10 Analyst: VTS Analyzed: 08/31/2022 03:48

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	83.9	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	122	%	Q
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	95.5	%	



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MW-3-220817
22H0305-03 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 08/17/2022 13:10

Instrument: NT18 Analyst: VTS

Analyzed: 09/03/2022 13:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0446 Sample Size: 500 mL
Prepared: 08/23/2022 Final Volume: 0.5 mL
Extract ID: 22H0305-03 E 01

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CKI0019 Initial Volume: 0.5 uL
Cleaned: 02-Sep-2022 Final Volume: 0.5 uL
Extract ID: 22H0305-03 E 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.002	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	0.001	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.001	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	0.001	ug/L	J
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 54.2 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 74.2 %

Surrogate: Fluoranthene-d10

57-120 % 70.9 %



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MW-3-220817
22H0305-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 08/17/2022 13:10
Instrument: FID4 Analyst: AA Analyzed: 08/31/2022 19:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22H0305-03 C 01
Preparation Batch: BKH0437 Sample Size: 500 mL
Prepared: 08/22/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	114	%	



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Project Manager: Zanna Satterwhite

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MW-3-220817
22H0305-03 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 08/17/2022 13:10

Instrument: ECD7 Analyst: JGR

Analyzed: 08/20/2022 19:23

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKH0435 Prepared: 08/18/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22H0305-03 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKH0157 Cleansed: 19-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0305-03 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKH0156 Cleansed: 19-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0305-03 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKH0158 Cleansed: 19-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0305-03 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	62.8	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	59.5	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	62.7	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	56.0	%



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MW-3-220817
22H0305-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 08/17/2022 13:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/26/2022 00:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0305-03 K 01
Preparation Batch: BKH0656 Sample Size: 25 mL
Prepared: 08/25/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	0.136	ug/L	J
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-3-220817
22H0305-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 08/17/2022 13:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/26/2022 00:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0305-03 K 01
Preparation Batch: BKH0656 Sample Size: 25 mL
Prepared: 08/25/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.350	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.877	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	3.06	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-3-220817
22H0305-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 08/17/2022 13:10
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0305-03 K
Preparation Batch: BKH0730 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-3-220817
22H0305-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 08/17/2022 13:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 06:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0305-04 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.157	ug/L	J
Chromium, Dissolved	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 08/31/2022 23:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0305-04 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U



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MW-3-220817
22H0305-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 08/17/2022 13:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 06:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0305-04 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.352	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.496	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	3.07	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-3-220817
22H0305-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 08/17/2022 13:10
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0305-04 A
Preparation Batch: BKH0731 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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TRIP BLANKS
22H0305-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/17/2022 12:15

Instrument: NT3 Analyst: LH

Analyzed: 08/18/2022 10:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKH0439
Prepared: 08/18/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22H0305-05 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project Manager: Zanna Satterwhite

Reported:
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TRIP BLANKS
22H0305-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/17/2022 12:15

Instrument: NT3 Analyst: LH

Analyzed: 08/18/2022 10:09

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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TRIP BLANKS
22H0305-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/17/2022 12:15

Instrument: NT3 Analyst: LH

Analyzed: 08/18/2022 10:09

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	110	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	103	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	98.7	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	104	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 07-Sep-2022 17:52
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TRIP BLANKS
22H0305-05 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 08/17/2022 12:15
Instrument: NT3 Analyst: LH Analyzed: 08/18/2022 10:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22H0305-05 A
Preparation Batch: BKH0439 Sample Size: 10 mL
Prepared: 08/18/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	103	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	98.7	%	



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0439 - EPA 5030C (Purge and Trap)

Instrument: NT3 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0439-BLK1)		Prepared: 18-Aug-2022 Analyzed: 18-Aug-2022 08:41								
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	5.04		ug/L	5.00	101		80-120			
Surrogate: 4-Bromofluorobenzene	4.76		ug/L	5.00	95.1		80-120			
Blank (BKH0439-BLK2)		Prepared: 18-Aug-2022 Analyzed: 18-Aug-2022 08:41								
Chloromethane	ND	0.27	0.50	ug/L						U
Vinyl Chloride	ND	0.08	0.20	ug/L						U
Bromomethane	ND	0.74	1.00	ug/L						U
Chloroethane	ND	0.18	0.20	ug/L						U
Trichlorofluoromethane	ND	0.13	0.20	ug/L						U
Acrolein	ND	2.70	5.00	ug/L						U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.11	0.20	ug/L						U
Acetone	ND	4.33	5.00	ug/L						U
1,1-Dichloroethene	ND	0.08	0.20	ug/L						U
Iodomethane	ND	0.43	1.00	ug/L						U
Methylene Chloride	ND	0.53	1.00	ug/L						U
Acrylonitrile	ND	0.40	1.00	ug/L						U
Carbon Disulfide	ND	0.12	0.20	ug/L						U
trans-1,2-Dichloroethene	ND	0.07	0.20	ug/L						U
Vinyl Acetate	ND	0.12	0.20	ug/L						U
1,1-Dichloroethane	ND	0.09	0.20	ug/L						U
2-Butanone	ND	1.77	5.00	ug/L						U
2,2-Dichloropropane	ND	0.11	0.20	ug/L						U
cis-1,2-Dichloroethene	ND	0.08	0.20	ug/L						U
Chloroform	ND	0.05	0.20	ug/L						U
Bromochloromethane	ND	0.09	0.20	ug/L						U
1,1,1-Trichloroethane	ND	0.08	0.20	ug/L						U
1,1-Dichloropropene	ND	0.09	0.20	ug/L						U
Carbon tetrachloride	ND	0.09	0.20	ug/L						U
1,2-Dichloroethane	ND	0.08	0.20	ug/L						U
Benzene	ND	0.05	0.20	ug/L						U
Trichloroethene	ND	0.07	0.20	ug/L						U
1,2-Dichloropropane	ND	0.07	0.20	ug/L						U
Bromodichloromethane	ND	0.09	0.20	ug/L						U
Dibromomethane	ND	0.06	0.20	ug/L						U



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Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0439 - EPA 5030C (Purge and Trap)

Instrument: NT3 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0439-BLK2)						Prepared: 18-Aug-2022 Analyzed: 18-Aug-2022 08:41					
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	1.90	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U
Toluene	ND	0.05	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U
2-Hexanone	ND	2.06	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.10	0.20	ug/L							U
1,3-Dichloropropane	ND	0.07	0.20	ug/L							U
Tetrachloroethene	ND	0.09	0.20	ug/L							U
Dibromochloromethane	ND	0.09	0.20	ug/L							U
1,2-Dibromoethane	ND	0.09	0.20	ug/L							U
Chlorobenzene	ND	0.06	0.20	ug/L							U
Ethylbenzene	ND	0.05	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.09	0.20	ug/L							U
m,p-Xylene	ND	0.14	0.40	ug/L							U
o-Xylene	ND	0.08	0.20	ug/L							U
Xylenes, total	ND	0.22	0.60	ug/L							U
Styrene	ND	0.09	0.20	ug/L							U
Bromoform	ND	0.15	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.10	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.16	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	0.60	1.00	ug/L							U
n-Propylbenzene	ND	0.07	0.20	ug/L							U
Bromobenzene	ND	0.07	0.20	ug/L							U
Isopropyl Benzene	ND	0.07	0.20	ug/L							U
2-Chlorotoluene	ND	0.06	0.20	ug/L							U
4-Chlorotoluene	ND	0.06	0.20	ug/L							U
t-Butylbenzene	ND	0.07	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.07	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.10	0.20	ug/L							U
s-Butylbenzene	ND	0.06	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.08	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.10	0.20	ug/L							U
n-Butylbenzene	ND	0.18	0.20	ug/L							U



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0439 - EPA 5030C (Purge and Trap)

Instrument: NT3 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0439-BLK2)											
						Prepared: 18-Aug-2022	Analyzed: 18-Aug-2022 08:41				
1,2-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.39	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.21	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	1.00	2.00	ug/L							U
Naphthalene	ND	0.27	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.25	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.13	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.14	0.50	ug/L							U
2-Pentanone	ND	2.34	5.00	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.24			ug/L	5.00		105	80-129			
<i>Surrogate: Toluene-d8</i>	5.04			ug/L	5.00		101	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.76			ug/L	5.00		95.1	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.21			ug/L	5.00		104	80-120			
LCS (BKH0439-BS1)											
						Prepared: 18-Aug-2022	Analyzed: 18-Aug-2022 06:48				
Gasoline Range Organics (Tol-Nap)	1070		100	ug/L	1000		107	72-128			
<i>Surrogate: Toluene-d8</i>	5.07			ug/L	5.00		101	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.87			ug/L	5.00		97.4	80-120			
LCS (BKH0439-BS2)											
						Prepared: 18-Aug-2022	Analyzed: 18-Aug-2022 07:10				
Chloromethane	9.99	0.27	0.50	ug/L	10.0		99.9	60-138			
Vinyl Chloride	11.0	0.08	0.20	ug/L	10.0		110	66-133			
Bromomethane	10.9	0.74	1.00	ug/L	10.0		109	72-131			
Chloroethane	10.6	0.18	0.20	ug/L	10.0		106	60-155			
Trichlorofluoromethane	10.9	0.13	0.20	ug/L	10.0		109	62-141			
Acrolein	34.1	2.70	5.00	ug/L	50.0		68.1	52-190			Q
1,1,2-Trichloro-1,2,2-Trifluoroethane	11.0	0.11	0.20	ug/L	10.0		110	76-129			
Acetone	54.3	4.33	5.00	ug/L	50.0		109	58-142			
1,1-Dichloroethene	10.6	0.08	0.20	ug/L	10.0		106	69-135			
Iodomethane	10.8	0.43	1.00	ug/L	10.0		108	56-147			
Methylene Chloride	11.3	0.53	1.00	ug/L	10.0		113	65-135			
Acrylonitrile	11.8	0.40	1.00	ug/L	10.0		118	64-134			
Carbon Disulfide	10.5	0.12	0.20	ug/L	10.0		105	78-125			
trans-1,2-Dichloroethene	10.4	0.07	0.20	ug/L	10.0		104	78-128			



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0439 - EPA 5030C (Purge and Trap)

Instrument: NT3 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0439-BS2)						Prepared: 18-Aug-2022 Analyzed: 18-Aug-2022 07:10					
Vinyl Acetate	11.0	0.12	0.20	ug/L	10.0		110	55-138			
1,1-Dichloroethane	10.8	0.09	0.20	ug/L	10.0		108	76-124			
2-Butanone	59.5	1.77	5.00	ug/L	50.0		119	61-140			
2,2-Dichloropropane	11.0	0.11	0.20	ug/L	10.0		110	66-147			
cis-1,2-Dichloroethene	10.6	0.08	0.20	ug/L	10.0		106	80-121			
Chloroform	10.6	0.05	0.20	ug/L	10.0		106	80-122			
Bromochloromethane	10.8	0.09	0.20	ug/L	10.0		108	80-121			
1,1,1-Trichloroethane	10.8	0.08	0.20	ug/L	10.0		108	79-123			
1,1-Dichloropropene	10.5	0.09	0.20	ug/L	10.0		105	80-127			
Carbon tetrachloride	11.0	0.09	0.20	ug/L	10.0		110	53-137			
1,2-Dichloroethane	11.0	0.08	0.20	ug/L	10.0		110	75-123			
Benzene	11.0	0.05	0.20	ug/L	10.0		110	80-120			
Trichloroethene	10.6	0.07	0.20	ug/L	10.0		106	80-120			
1,2-Dichloropropane	11.0	0.07	0.20	ug/L	10.0		110	80-120			
Bromodichloromethane	10.5	0.09	0.20	ug/L	10.0		105	80-121			
Dibromomethane	10.5	0.06	0.20	ug/L	10.0		105	80-120			
2-Chloroethyl vinyl ether	10.8	0.55	1.00	ug/L	10.0		108	64-120			
4-Methyl-2-Pentanone	56.6	1.90	5.00	ug/L	50.0		113	67-133			
cis-1,3-Dichloropropene	11.0	0.09	0.20	ug/L	10.0		110	80-124			
Toluene	11.1	0.05	0.20	ug/L	10.0		111	80-120			
trans-1,3-Dichloropropene	11.1	0.09	0.20	ug/L	10.0		111	71-127			
2-Hexanone	55.5	2.06	5.00	ug/L	50.0		111	69-133			
1,1,2-Trichloroethane	10.8	0.10	0.20	ug/L	10.0		108	80-121			
1,3-Dichloropropane	10.6	0.07	0.20	ug/L	10.0		106	80-120			
Tetrachloroethene	10.3	0.09	0.20	ug/L	10.0		103	80-120			
Dibromochloromethane	10.4	0.09	0.20	ug/L	10.0		104	65-135			
1,2-Dibromoethane	10.6	0.09	0.20	ug/L	10.0		106	80-121			
Chlorobenzene	10.5	0.06	0.20	ug/L	10.0		105	80-120			
Ethylbenzene	10.3	0.05	0.20	ug/L	10.0		103	80-120			
1,1,1,2-Tetrachloroethane	10.5	0.09	0.20	ug/L	10.0		105	80-120			
m,p-Xylene	21.4	0.14	0.40	ug/L	20.0		107	80-121			
o-Xylene	10.3	0.08	0.20	ug/L	10.0		103	80-121			
Xylenes, total	31.7	0.22	0.60	ug/L	30.0		106	76-127			
Styrene	10.8	0.09	0.20	ug/L	10.0		108	80-124			
Bromoform	10.8	0.15	0.20	ug/L	10.0		108	51-134			



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0439 - EPA 5030C (Purge and Trap)

Instrument: NT3 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0439-BS2)						Prepared: 18-Aug-2022 Analyzed: 18-Aug-2022 07:10					
1,1,2,2-Tetrachloroethane	11.0	0.10	0.20	ug/L	10.0		110	77-123			
1,2,3-Trichloropropane	10.7	0.16	0.50	ug/L	10.0		107	76-125			
trans-1,4-Dichloro 2-Butene	10.8	0.60	1.00	ug/L	10.0		108	55-129			
n-Propylbenzene	10.9	0.07	0.20	ug/L	10.0		109	78-130			
Bromobenzene	10.5	0.07	0.20	ug/L	10.0		105	80-120			
Isopropyl Benzene	11.0	0.07	0.20	ug/L	10.0		110	80-128			
2-Chlorotoluene	10.8	0.06	0.20	ug/L	10.0		108	78-122			
4-Chlorotoluene	10.4	0.06	0.20	ug/L	10.0		104	80-121			
t-Butylbenzene	10.9	0.07	0.20	ug/L	10.0		109	78-125			
1,3,5-Trimethylbenzene	11.1	0.07	0.20	ug/L	10.0		111	80-129			
1,2,4-Trimethylbenzene	10.9	0.10	0.20	ug/L	10.0		109	80-127			
s-Butylbenzene	11.1	0.06	0.20	ug/L	10.0		111	78-129			
4-Isopropyl Toluene	11.0	0.08	0.20	ug/L	10.0		110	79-130			
1,3-Dichlorobenzene	10.4	0.08	0.20	ug/L	10.0		104	80-120			
1,4-Dichlorobenzene	10.1	0.10	0.20	ug/L	10.0		101	80-120			
n-Butylbenzene	10.9	0.18	0.20	ug/L	10.0		109	74-129			
1,2-Dichlorobenzene	10.1	0.08	0.20	ug/L	10.0		101	80-120			
1,2-Dibromo-3-chloropropane	10.5	0.39	0.50	ug/L	10.0		105	62-123			
1,2,4-Trichlorobenzene	10.3	0.21	0.50	ug/L	10.0		103	64-124			
Hexachloro-1,3-Butadiene	10.8	1.00	2.00	ug/L	10.0		108	58-123			
Naphthalene	10.9	0.27	0.50	ug/L	10.0		109	50-134			
1,2,3-Trichlorobenzene	10.7	0.25	0.50	ug/L	10.0		107	49-133			
Dichlorodifluoromethane	8.82	0.13	0.20	ug/L	10.0		88.2	48-147			
Methyl tert-butyl Ether	11.2	0.14	0.50	ug/L	10.0		112	71-132			
2-Pentanone	55.5	2.34	5.00	ug/L	50.0		111	69-134			
Surrogate: 1,2-Dichloroethane-d4	5.20			ug/L	5.00		104	80-129			
Surrogate: Toluene-d8	5.19			ug/L	5.00		104	80-120			
Surrogate: 4-Bromofluorobenzene	4.80			ug/L	5.00		96.1	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.02			ug/L	5.00		100	80-120			
LCS Dup (BKH0439-BSD1)						Prepared: 18-Aug-2022 Analyzed: 18-Aug-2022 07:32					
Gasoline Range Organics (Tol-Nap)	976		100	ug/L	1000		97.6	72-128	8.86	30	
Surrogate: Toluene-d8	5.12			ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.88			ug/L	5.00		97.6	80-120			



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Project Manager: Zanna Satterwhite

Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0439 - EPA 5030C (Purge and Trap)

Instrument: NT3 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKH0439-BSD2)						Prepared: 18-Aug-2022 Analyzed: 18-Aug-2022 09:03					
Chloromethane	9.80	0.27	0.50	ug/L	10.0		98.0	60-138	1.91	30	
Vinyl Chloride	11.0	0.08	0.20	ug/L	10.0		110	66-133	0.17	30	
Bromomethane	10.7	0.74	1.00	ug/L	10.0		107	72-131	2.55	30	
Chloroethane	10.3	0.18	0.20	ug/L	10.0		103	60-155	2.80	30	
Trichlorofluoromethane	11.1	0.13	0.20	ug/L	10.0		111	62-141	2.21	30	
Acrolein	27.4	2.70	5.00	ug/L	50.0		54.8	52-190	21.80	30	Q
1,1,2-Trichloro-1,2,2-Trifluoroethane	11.1	0.11	0.20	ug/L	10.0		111	76-129	1.04	30	
Acetone	83.5	4.33	5.00	ug/L	50.0		167	58-142	42.40	30	*
1,1-Dichloroethene	10.9	0.08	0.20	ug/L	10.0		109	69-135	2.92	30	
Iodomethane	10.7	0.43	1.00	ug/L	10.0		107	56-147	1.32	30	
Methylene Chloride	11.2	0.53	1.00	ug/L	10.0		112	65-135	1.52	30	
Acrylonitrile	11.3	0.40	1.00	ug/L	10.0		113	64-134	3.85	30	
Carbon Disulfide	10.5	0.12	0.20	ug/L	10.0		105	78-125	0.36	30	
trans-1,2-Dichloroethene	9.94	0.07	0.20	ug/L	10.0		99.4	78-128	4.37	30	
Vinyl Acetate	10.9	0.12	0.20	ug/L	10.0		109	55-138	0.88	30	
1,1-Dichloroethane	10.6	0.09	0.20	ug/L	10.0		106	76-124	1.95	30	
2-Butanone	70.0	1.77	5.00	ug/L	50.0		140	61-140	16.20	30	
2,2-Dichloropropane	10.8	0.11	0.20	ug/L	10.0		108	66-147	1.90	30	
cis-1,2-Dichloroethene	10.6	0.08	0.20	ug/L	10.0		106	80-121	0.14	30	
Chloroform	10.7	0.05	0.20	ug/L	10.0		107	80-122	0.63	30	
Bromochloromethane	10.6	0.09	0.20	ug/L	10.0		106	80-121	1.42	30	
1,1,1-Trichloroethane	10.6	0.08	0.20	ug/L	10.0		106	79-123	1.68	30	
1,1-Dichloropropene	10.6	0.09	0.20	ug/L	10.0		106	80-127	0.65	30	
Carbon tetrachloride	10.4	0.09	0.20	ug/L	10.0		104	53-137	5.68	30	
1,2-Dichloroethane	10.9	0.08	0.20	ug/L	10.0		109	75-123	0.29	30	
Benzene	10.9	0.05	0.20	ug/L	10.0		109	80-120	0.21	30	
Trichloroethene	10.6	0.07	0.20	ug/L	10.0		106	80-120	0.04	30	
1,2-Dichloropropane	10.8	0.07	0.20	ug/L	10.0		108	80-120	1.76	30	
Bromodichloromethane	10.5	0.09	0.20	ug/L	10.0		105	80-121	0.22	30	
Dibromomethane	10.5	0.06	0.20	ug/L	10.0		105	80-120	0.70	30	
2-Chloroethyl vinyl ether	10.8	0.55	1.00	ug/L	10.0		108	64-120	0.77	30	
4-Methyl-2-Pentanone	58.6	1.90	5.00	ug/L	50.0		117	67-133	3.41	30	
cis-1,3-Dichloropropene	11.2	0.09	0.20	ug/L	10.0		112	80-124	1.34	30	
Toluene	11.3	0.05	0.20	ug/L	10.0		113	80-120	1.70	30	
trans-1,3-Dichloropropene	11.1	0.09	0.20	ug/L	10.0		111	71-127	0.02	30	



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0439 - EPA 5030C (Purge and Trap)

Instrument: NT3 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKH0439-BSD2)						Prepared: 18-Aug-2022 Analyzed: 18-Aug-2022 09:03					
2-Hexanone	60.2	2.06	5.00	ug/L	50.0	120	69-133	8.14	30		
1,1,2-Trichloroethane	10.9	0.10	0.20	ug/L	10.0	109	80-121	0.86	30		
1,3-Dichloropropane	10.6	0.07	0.20	ug/L	10.0	106	80-120	0.47	30		
Tetrachloroethene	10.4	0.09	0.20	ug/L	10.0	104	80-120	1.16	30		
Dibromochloromethane	10.6	0.09	0.20	ug/L	10.0	106	65-135	1.94	30		
1,2-Dibromoethane	10.8	0.09	0.20	ug/L	10.0	108	80-121	1.64	30		
Chlorobenzene	10.7	0.06	0.20	ug/L	10.0	107	80-120	1.67	30		
Ethylbenzene	10.5	0.05	0.20	ug/L	10.0	105	80-120	1.72	30		
1,1,1,2-Tetrachloroethane	10.8	0.09	0.20	ug/L	10.0	108	80-120	2.42	30		
m,p-Xylene	21.8	0.14	0.40	ug/L	20.0	109	80-121	1.99	30		
o-Xylene	10.4	0.08	0.20	ug/L	10.0	104	80-121	0.67	30		
Xylenes, total	32.2	0.22	0.60	ug/L	30.0	107	76-127	1.56	30		
Styrene	11.0	0.09	0.20	ug/L	10.0	110	80-124	1.77	30		
Bromoform	11.0	0.15	0.20	ug/L	10.0	110	51-134	1.74	30		
1,1,2,2-Tetrachloroethane	11.1	0.10	0.20	ug/L	10.0	111	77-123	1.40	30		
1,2,3-Trichloropropane	10.6	0.16	0.50	ug/L	10.0	106	76-125	1.01	30		
trans-1,4-Dichloro 2-Butene	11.1	0.60	1.00	ug/L	10.0	111	55-129	2.63	30		
n-Propylbenzene	11.2	0.07	0.20	ug/L	10.0	112	78-130	2.63	30		
Bromobenzene	10.7	0.07	0.20	ug/L	10.0	107	80-120	1.42	30		
Isopropyl Benzene	11.3	0.07	0.20	ug/L	10.0	113	80-128	2.72	30		
2-Chlorotoluene	10.9	0.06	0.20	ug/L	10.0	109	78-122	0.38	30		
4-Chlorotoluene	10.8	0.06	0.20	ug/L	10.0	108	80-121	3.76	30		
t-Butylbenzene	11.2	0.07	0.20	ug/L	10.0	112	78-125	3.14	30		
1,3,5-Trimethylbenzene	11.4	0.07	0.20	ug/L	10.0	114	80-129	2.38	30		
1,2,4-Trimethylbenzene	11.0	0.10	0.20	ug/L	10.0	110	80-127	1.02	30		
s-Butylbenzene	11.5	0.06	0.20	ug/L	10.0	115	78-129	3.81	30		
4-Isopropyl Toluene	11.4	0.08	0.20	ug/L	10.0	114	79-130	4.08	30		
1,3-Dichlorobenzene	10.8	0.08	0.20	ug/L	10.0	108	80-120	3.12	30		
1,4-Dichlorobenzene	10.7	0.10	0.20	ug/L	10.0	107	80-120	5.89	30		
n-Butylbenzene	11.4	0.18	0.20	ug/L	10.0	114	74-129	4.39	30		
1,2-Dichlorobenzene	10.6	0.08	0.20	ug/L	10.0	106	80-120	3.98	30		
1,2-Dibromo-3-chloropropane	9.96	0.39	0.50	ug/L	10.0	99.6	62-123	5.21	30		
1,2,4-Trichlorobenzene	10.8	0.21	0.50	ug/L	10.0	108	64-124	5.08	30		
Hexachloro-1,3-Butadiene	11.0	1.00	2.00	ug/L	10.0	110	58-123	1.80	30		
Naphthalene	11.2	0.27	0.50	ug/L	10.0	112	50-134	2.65	30		



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0439 - EPA 5030C (Purge and Trap)

Instrument: NT3 Analyst: LH

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKH0439-BSD2)					Prepared: 18-Aug-2022 Analyzed: 18-Aug-2022 09:03						
1,2,3-Trichlorobenzene	10.9	0.25	0.50	ug/L	10.0		109	49-133	1.84	30	
Dichlorodifluoromethane	10.4	0.13	0.20	ug/L	10.0		104	48-147	16.60	30	
Methyl tert-butyl Ether	11.1	0.14	0.50	ug/L	10.0		111	71-132	0.53	30	
2-Pentanone	59.8	2.34	5.00	ug/L	50.0		120	69-134	7.34	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.25			ug/L	5.00		105	80-129			
<i>Surrogate: Toluene-d8</i>	5.17			ug/L	5.00		103	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.06			ug/L	5.00		101	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.12			ug/L	5.00		102	80-120			



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Reported:
07-Sep-2022 17:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0447 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0447-BLK1)						Prepared: 22-Aug-2022 Analyzed: 31-Aug-2022 03:09					
Phenol	ND	0.01	0.2	ug/L							U
bis(2-chloroethyl) ether	ND	0.03	0.2	ug/L							U
2-Chlorophenol	ND	0.03	0.2	ug/L							U
1,3-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,4-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,2-Dichlorobenzene	ND	0.03	0.2	ug/L							U
Benzyl Alcohol	0.04	0.02	0.2	ug/L							J
2,2'-Oxybis(1-chloropropane)	ND	0.03	0.2	ug/L							U
2-Methylphenol	ND	0.03	0.2	ug/L							U
Hexachloroethane	ND	0.04	0.2	ug/L							U
N-Nitroso-di-n-Propylamine	ND	0.04	0.2	ug/L							U
4-Methylphenol	ND	0.03	0.2	ug/L							U
Nitrobenzene	ND	0.03	0.2	ug/L							U
Isophorone	ND	0.03	0.2	ug/L							U
2-Nitrophenol	ND	0.04	1.0	ug/L							U
2,4-Dimethylphenol	ND	0.3	1.0	ug/L							U
Bis(2-Chloroethoxy)methane	ND	0.03	0.2	ug/L							U
2,4-Dichlorophenol	ND	0.1	1.0	ug/L							U
1,2,4-Trichlorobenzene	ND	0.03	0.2	ug/L							U
Naphthalene	ND	0.03	0.2	ug/L							U
Benzoic acid	ND	0.1	2.0	ug/L							U
4-Chloroaniline	ND	0.04	1.0	ug/L							U
Hexachlorobutadiene	ND	0.04	0.2	ug/L							U
4-Chloro-3-Methylphenol	ND	0.1	1.0	ug/L							U
2-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Hexachlorocyclopentadiene	ND	0.1	1.0	ug/L							U
2,4,6-Trichlorophenol	ND	0.2	1.0	ug/L							U
2,4,5-Trichlorophenol	ND	0.1	1.0	ug/L							U
2-Chloronaphthalene	ND	0.03	0.2	ug/L							U
2-Nitroaniline	ND	0.2	1.0	ug/L							U
Acenaphthylene	ND	0.02	0.2	ug/L							U
Dimethylphthalate	ND	0.04	0.2	ug/L							U
2,6-Dinitrotoluene	ND	0.2	1.0	ug/L							U
Acenaphthene	ND	0.03	0.2	ug/L							U
3-Nitroaniline	ND	0.2	1.0	ug/L							U



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0447 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0447-BLK1)						Prepared: 22-Aug-2022 Analyzed: 31-Aug-2022 03:09					
2,4-Dinitrophenol	ND	0.2	2.0	ug/L							U
Dibenzofuran	ND	0.02	0.2	ug/L							U
4-Nitrophenol	ND	0.06	1.0	ug/L							U
2,4-Dinitrotoluene	ND	0.1	1.0	ug/L							U
Fluorene	ND	0.02	0.2	ug/L							U
4-Chlorophenylphenyl ether	ND	0.02	0.2	ug/L							U
Diethyl phthalate	ND	0.06	0.2	ug/L							U
4-Nitroaniline	ND	0.2	1.0	ug/L							U
4,6-Dinitro-2-methylphenol	ND	0.4	2.0	ug/L							U
N-Nitrosodiphenylamine	ND	0.03	0.2	ug/L							U
4-Bromophenyl phenyl ether	ND	0.02	0.2	ug/L							U
Hexachlorobenzene	ND	0.04	0.2	ug/L							U
Pentachlorophenol	ND	0.1	1.0	ug/L							U
Phenanthrene	ND	0.02	0.2	ug/L							U
Anthracene	ND	0.03	0.2	ug/L							U
Carbazole	ND	0.04	0.2	ug/L							U
Di-n-Butylphthalate	ND	0.05	0.2	ug/L							U
Fluoranthene	ND	0.03	0.2	ug/L							U
Pyrene	ND	0.03	0.2	ug/L							U
Butylbenzylphthalate	ND	0.07	0.2	ug/L							U
Benzo(a)anthracene	ND	0.04	0.2	ug/L							U
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L							U
Chrysene	ND	0.04	0.2	ug/L							U
bis(2-Ethylhexyl)phthalate	0.3	0.2	0.2	ug/L							
Di-n-Octylphthalate	ND	0.05	0.2	ug/L							U
Benzo(a)fluoranthene, Total	ND	0.08	0.4	ug/L							U
Benzo(a)pyrene	ND	0.05	0.2	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.06	0.2	ug/L							U
Dibenzo(a,h)anthracene	ND	0.07	0.2	ug/L							U
Benzo(g,h,i)perylene	ND	0.04	0.2	ug/L							U
1-Methylnaphthalene	ND	0.03	0.2	ug/L							U
<i>Surrogate: 2-Fluorophenol</i>	4.70			ug/L	7.50		62.6	30-160			
<i>Surrogate: Phenol-d5</i>	3.06			ug/L	7.50		40.8	30-160			Q
<i>Surrogate: 2-Chlorophenol-d4</i>	7.28			ug/L	7.50		97.1	30-160			



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Semivolatile Organic Compounds - Quality Control

Batch BKH0447 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0447-BLK1)					Prepared: 22-Aug-2022		Analyzed: 31-Aug-2022 03:09				
Surrogate: 1,2-Dichlorobenzene-d4	3.71			ug/L	5.00		74.3	30-160			
Surrogate: Nitrobenzene-d5	5.09			ug/L	5.00		102	30-160			
Surrogate: 2-Fluorobiphenyl	4.30			ug/L	5.00		86.1	30-160			
Surrogate: 2,4,6-Tribromophenol	9.06			ug/L	7.50		121	30-160			Q
Surrogate: p-Terphenyl-d14	4.66			ug/L	5.00		93.3	30-160			
LCS (BKH0447-BS1)					Prepared: 22-Aug-2022		Analyzed: 31-Aug-2022 02:30				
Phenol	2.6	0.01	0.2	ug/L	5.00		52.5	30-160			Q
bis(2-chloroethyl) ether	5.7	0.03	0.2	ug/L	5.00		113	30-160			
2-Chlorophenol	5.1	0.03	0.2	ug/L	5.00		102	30-160			
1,3-Dichlorobenzene	3.6	0.03	0.2	ug/L	5.00		71.7	30-160			
1,4-Dichlorobenzene	4.5	0.03	0.2	ug/L	5.00		89.8	30-160			
1,2-Dichlorobenzene	3.8	0.03	0.2	ug/L	5.00		75.5	30-160			
Benzyl Alcohol	2.7	0.02	0.2	ug/L	5.00		53.2	30-160			
2,2'-Oxybis(1-chloropropane)	6.6	0.03	0.2	ug/L	5.00		132	30-160			
2-Methylphenol	4.3	0.03	0.2	ug/L	5.00		85.3	30-160			
Hexachloroethane	3.4	0.04	0.2	ug/L	5.00		68.1	30-160			
N-Nitroso-di-n-Propylamine	5.6	0.04	0.2	ug/L	5.00		112	30-160			Q
4-Methylphenol	4.3	0.03	0.2	ug/L	5.00		86.0	30-160			
Nitrobenzene	5.4	0.03	0.2	ug/L	5.00		109	30-160			
Isophorone	7.7	0.03	0.2	ug/L	5.00		155	30-160			
2-Nitrophenol	4.8	0.04	1.0	ug/L	5.00		95.6	30-160			
2,4-Dimethylphenol	13.4	0.3	1.0	ug/L	13.0		103	30-160			
Bis(2-Chloroethoxy)methane	5.9	0.03	0.2	ug/L	5.00		118	30-160			
2,4-Dichlorophenol	15.1	0.1	1.0	ug/L	13.0		116	30-160			
1,2,4-Trichlorobenzene	3.6	0.03	0.2	ug/L	5.00		71.1	30-160			
Naphthalene	4.1	0.03	0.2	ug/L	5.00		81.0	30-160			
Benzoic acid	11.9	0.1	2.0	ug/L	23.0		52.0	30-160			
4-Chloroaniline	3.7	0.04	1.0	ug/L	13.0		28.7	30-160			*
Hexachlorobutadiene	3.3	0.04	0.2	ug/L	5.00		66.0	30-160			
4-Chloro-3-Methylphenol	15.2	0.1	1.0	ug/L	13.0		117	30-160			
2-Methylnaphthalene	4.2	0.03	0.2	ug/L	5.00		84.7	30-160			
Hexachlorocyclopentadiene	7.6	0.1	1.0	ug/L	13.0		58.2	30-160			Q
2,4,6-Trichlorophenol	15.9	0.2	1.0	ug/L	13.0		122	30-160			
2,4,5-Trichlorophenol	13.5	0.1	1.0	ug/L	13.0		104	30-160			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0447 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0447-BS1)						Prepared: 22-Aug-2022 Analyzed: 31-Aug-2022 02:30					
2-Chloronaphthalene	4.3	0.03	0.2	ug/L	5.00		85.9	30-160			
2-Nitroaniline	21.9	0.2	1.0	ug/L	13.0		169	30-160			*, Q
Acenaphthylene	3.7	0.02	0.2	ug/L	5.00		74.1	30-160			
Dimethylphthalate	4.6	0.04	0.2	ug/L	5.00		91.4	30-160			
2,6-Dinitrotoluene	15.3	0.2	1.0	ug/L	13.0		118	30-160			
Acenaphthene	4.3	0.03	0.2	ug/L	5.00		86.3	30-160			
3-Nitroaniline	14.0	0.2	1.0	ug/L	13.0		107	30-160			
2,4-Dinitrophenol	25.4	0.2	2.0	ug/L	23.0		111	30-160			
Dibenzofuran	4.5	0.02	0.2	ug/L	5.00		90.3	30-160			
4-Nitrophenol	5.2	0.06	1.0	ug/L	13.0		39.8	30-160			Q
2,4-Dinitrotoluene	14.8	0.1	1.0	ug/L	13.0		114	30-160			
Fluorene	4.0	0.02	0.2	ug/L	5.00		80.1	30-160			
4-Chlorophenylphenyl ether	4.5	0.02	0.2	ug/L	5.00		90.3	30-160			
Diethyl phthalate	4.4	0.06	0.2	ug/L	5.00		88.6	30-160			
4-Nitroaniline	14.7	0.2	1.0	ug/L	13.0		113	30-160			
4,6-Dinitro-2-methylphenol	30.1	0.4	2.0	ug/L	23.0		131	30-160			
N-Nitrosodiphenylamine	4.3	0.03	0.2	ug/L	5.00		85.3	30-160			
4-Bromophenyl phenyl ether	2.9	0.02	0.2	ug/L	5.00		57.2	30-160			Q
Hexachlorobenzene	5.5	0.04	0.2	ug/L	5.00		109	30-160			
Pentachlorophenol	12.2	0.1	1.0	ug/L	13.0		94.1	30-160			Q
Phenanthrene	4.4	0.02	0.2	ug/L	5.00		87.4	30-160			
Anthracene	4.2	0.03	0.2	ug/L	5.00		83.3	30-160			
Carbazole	4.5	0.04	0.2	ug/L	5.00		90.4	30-160			
Di-n-Butylphthalate	4.2	0.05	0.2	ug/L	5.00		84.5	30-160			
Fluoranthene	4.3	0.03	0.2	ug/L	5.00		87.0	30-160			
Pyrene	4.2	0.03	0.2	ug/L	5.00		84.8	30-160			Q
Butylbenzylphthalate	4.3	0.07	0.2	ug/L	5.00		86.1	30-160			
Benzo(a)anthracene	4.1	0.04	0.2	ug/L	5.00		82.8	30-160			
3,3'-Dichlorobenzidine	11.9	0.3	1.0	ug/L	13.0		91.6	30-160			
Chrysene	3.8	0.04	0.2	ug/L	5.00		75.8	30-160			
bis(2-Ethylhexyl)phthalate	4.8	0.2	0.2	ug/L	5.00		96.5	30-160			B
Di-n-Octylphthalate	4.6	0.05	0.2	ug/L	5.00		91.0	30-160			
Benzo(a)fluoranthene, Total	8.6	0.08	0.4	ug/L	10.0		85.6	30-160			
Benzo(a)pyrene	4.2	0.05	0.2	ug/L	5.00		84.4	30-160			
Indeno(1,2,3-cd)pyrene	4.4	0.06	0.2	ug/L	5.00		88.0	30-160			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0447 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0447-BS1)					Prepared: 22-Aug-2022 Analyzed: 31-Aug-2022 02:30						
Dibenzo(a,h)anthracene	4.3	0.07	0.2	ug/L	5.00		85.5	30-160			
Benzo(g,h,i)perylene	4.3	0.04	0.2	ug/L	5.00		86.7	30-160			
1-Methylnaphthalene	4.3	0.03	0.2	ug/L	5.00		85.1	30-160			
Surrogate: 2-Fluorophenol	5.14			ug/L	7.50		68.5	30-160			
Surrogate: Phenol-d5	3.67			ug/L	7.50		48.9	30-160			Q
Surrogate: 2-Chlorophenol-d4	6.91			ug/L	7.50		92.1	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	3.61			ug/L	5.00		72.2	30-160			
Surrogate: Nitrobenzene-d5	5.40			ug/L	5.00		108	30-160			
Surrogate: 2-Fluorobiphenyl	4.33			ug/L	5.00		86.7	30-160			
Surrogate: 2,4,6-Tribromophenol	9.01			ug/L	7.50		120	30-160			Q
Surrogate: p-Terphenyl-d14	4.94			ug/L	5.00		98.8	30-160			
LCS Dup (BKH0447-BSD1)					Prepared: 22-Aug-2022 Analyzed: 30-Aug-2022 23:53						
Phenol	3.1	0.01	0.2	ug/L	5.00		62.3	30-160	17.10	30	Q
bis(2-chloroethyl) ether	6.5	0.03	0.2	ug/L	5.00		130	30-160	13.60	30	
2-Chlorophenol	5.3	0.03	0.2	ug/L	5.00		105	30-160	3.54	30	
1,3-Dichlorobenzene	4.1	0.03	0.2	ug/L	5.00		81.9	30-160	13.30	30	
1,4-Dichlorobenzene	5.3	0.03	0.2	ug/L	5.00		105	30-160	16.00	30	
1,2-Dichlorobenzene	4.3	0.03	0.2	ug/L	5.00		85.6	30-160	12.60	30	
Benzyl Alcohol	4.1	0.02	0.2	ug/L	5.00		81.1	30-160	41.60	30	*
2,2'-Oxybis(1-chloropropane)	7.5	0.03	0.2	ug/L	5.00		151	30-160	13.00	30	
2-Methylphenol	4.9	0.03	0.2	ug/L	5.00		98.6	30-160	14.50	30	
Hexachloroethane	3.8	0.04	0.2	ug/L	5.00		76.5	30-160	11.60	30	
N-Nitroso-di-n-Propylamine	6.6	0.04	0.2	ug/L	5.00		131	30-160	15.60	30	Q
4-Methylphenol	5.0	0.03	0.2	ug/L	5.00		99.0	30-160	14.10	30	
Nitrobenzene	6.2	0.03	0.2	ug/L	5.00		124	30-160	13.10	30	
Isophorone	8.9	0.03	0.2	ug/L	5.00		178	30-160	14.10	30	*
2-Nitrophenol	5.5	0.04	1.0	ug/L	5.00		111	30-160	14.60	30	
2,4-Dimethylphenol	15.2	0.3	1.0	ug/L	13.0		117	30-160	13.00	30	
Bis(2-Chloroethoxy)methane	6.6	0.03	0.2	ug/L	5.00		132	30-160	11.60	30	
2,4-Dichlorophenol	16.9	0.1	1.0	ug/L	13.0		130	30-160	11.00	30	
1,2,4-Trichlorobenzene	4.0	0.03	0.2	ug/L	5.00		79.5	30-160	11.10	30	
Naphthalene	4.7	0.03	0.2	ug/L	5.00		93.9	30-160	14.70	30	
Benzoic acid	14.4	0.1	2.0	ug/L	23.0		62.4	30-160	18.30	30	
4-Chloroaniline	4.6	0.04	1.0	ug/L	13.0		35.1	30-160	20.20	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0447 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKH0447-BSD1)						Prepared: 22-Aug-2022 Analyzed: 30-Aug-2022 23:53					
Hexachlorobutadiene	3.6	0.04	0.2	ug/L	5.00		72.1	30-160	8.80	30	
4-Chloro-3-Methylphenol	17.3	0.1	1.0	ug/L	13.0		133	30-160	12.40	30	
2-Methylnaphthalene	4.8	0.03	0.2	ug/L	5.00		96.7	30-160	13.20	30	
Hexachlorocyclopentadiene	7.6	0.1	1.0	ug/L	13.0		58.8	30-160	1.00	30	Q
2,4,6-Trichlorophenol	17.8	0.2	1.0	ug/L	13.0		137	30-160	11.40	30	
2,4,5-Trichlorophenol	15.7	0.1	1.0	ug/L	13.0		121	30-160	15.30	30	
2-Chloronaphthalene	4.9	0.03	0.2	ug/L	5.00		97.2	30-160	12.30	30	
2-Nitroaniline	23.7	0.2	1.0	ug/L	13.0		182	30-160	7.76	30	Q
Acenaphthylene	4.2	0.02	0.2	ug/L	5.00		84.2	30-160	12.70	30	
Dimethylphthalate	5.2	0.04	0.2	ug/L	5.00		104	30-160	12.60	30	
2,6-Dinitrotoluene	16.6	0.2	1.0	ug/L	13.0		128	30-160	7.78	30	
Acenaphthene	4.9	0.03	0.2	ug/L	5.00		98.0	30-160	12.70	30	
3-Nitroaniline	15.2	0.2	1.0	ug/L	13.0		117	30-160	8.29	30	
2,4-Dinitrophenol	30.4	0.2	2.0	ug/L	23.0		132	30-160	18.00	30	
Dibenzofuran	5.1	0.02	0.2	ug/L	5.00		102	30-160	12.60	30	
4-Nitrophenol	6.1	0.06	1.0	ug/L	13.0		46.9	30-160	16.40	30	Q
2,4-Dinitrotoluene	16.5	0.1	1.0	ug/L	13.0		127	30-160	10.40	30	
Fluorene	4.4	0.02	0.2	ug/L	5.00		88.1	30-160	9.48	30	
4-Chlorophenylphenyl ether	5.1	0.02	0.2	ug/L	5.00		101	30-160	11.50	30	
Diethyl phthalate	5.0	0.06	0.2	ug/L	5.00		100	30-160	12.10	30	
4-Nitroaniline	16.0	0.2	1.0	ug/L	13.0		123	30-160	7.84	30	
4,6-Dinitro-2-methylphenol	34.3	0.4	2.0	ug/L	23.0		149	30-160	13.00	30	
N-Nitrosodiphenylamine	4.7	0.03	0.2	ug/L	5.00		94.9	30-160	10.70	30	
4-Bromophenyl phenyl ether	3.2	0.02	0.2	ug/L	5.00		64.4	30-160	11.90	30	Q
Hexachlorobenzene	6.0	0.04	0.2	ug/L	5.00		120	30-160	8.99	30	
Pentachlorophenol	14.2	0.1	1.0	ug/L	13.0		110	30-160	15.20	30	Q
Phenanthrene	5.0	0.02	0.2	ug/L	5.00		99.5	30-160	13.00	30	
Anthracene	4.8	0.03	0.2	ug/L	5.00		96.6	30-160	14.80	30	
Carbazole	5.3	0.04	0.2	ug/L	5.00		105	30-160	15.40	30	
Di-n-Butylphthalate	4.8	0.05	0.2	ug/L	5.00		96.0	30-160	12.70	30	Q
Fluoranthene	4.9	0.03	0.2	ug/L	5.00		98.6	30-160	12.50	30	
Pyrene	4.3	0.03	0.2	ug/L	5.00		86.1	30-160	1.54	30	
Butylbenzylphthalate	4.9	0.07	0.2	ug/L	5.00		97.9	30-160	12.80	30	
Benzo(a)anthracene	4.6	0.04	0.2	ug/L	5.00		92.7	30-160	11.30	30	
3,3'-Dichlorobenzidine	12.5	0.3	1.0	ug/L	13.0		96.1	30-160	4.79	30	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0447 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKH0447-BSD1)					Prepared: 22-Aug-2022 Analyzed: 30-Aug-2022 23:53						
Chrysene	4.3	0.04	0.2	ug/L	5.00		86.6	30-160	13.20	30	
bis(2-Ethylhexyl)phthalate	5.4	0.2	0.2	ug/L	5.00		108	30-160	11.60	30	B
Di-n-Octylphthalate	5.2	0.05	0.2	ug/L	5.00		104	30-160	13.30	30	
Benzo(a)fluoranthene, Total	9.4	0.08	0.4	ug/L	10.0		94.2	30-160	9.60	30	
Benzo(a)pyrene	4.6	0.05	0.2	ug/L	5.00		92.5	30-160	9.20	30	
Indeno(1,2,3-cd)pyrene	4.9	0.06	0.2	ug/L	5.00		98.8	30-160	11.60	30	
Dibenzo(a,h)anthracene	4.8	0.07	0.2	ug/L	5.00		95.2	30-160	10.80	30	
Benzo(g,h,i)perylene	4.8	0.04	0.2	ug/L	5.00		95.8	30-160	9.95	30	
1-Methylnaphthalene	4.9	0.03	0.2	ug/L	5.00		97.3	30-160	13.40	30	
Surrogate: 2-Fluorophenol	6.05			ug/L	7.50		80.7	30-160			
Surrogate: Phenol-d5	4.50			ug/L	7.50		60.0	30-160			Q
Surrogate: 2-Chlorophenol-d4	8.05			ug/L	7.50		107	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	4.26			ug/L	5.00		85.2	30-160			
Surrogate: Nitrobenzene-d5	6.27			ug/L	5.00		125	30-160			
Surrogate: 2-Fluorobiphenyl	5.01			ug/L	5.00		100	30-160			
Surrogate: 2,4,6-Tribromophenol	10.6			ug/L	7.50		141	30-160			
Surrogate: p-Terphenyl-d14	5.67			ug/L	5.00		113	30-160			



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKH0446 - EPA 3510C SepF

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0446-BLK1)											
						Prepared: 23-Aug-2022 Analyzed: 03-Sep-2022 10:33					
Naphthalene	0.002	0.001	0.010	ug/L							J
2-Methylnaphthalene	ND	0.001	0.010	ug/L							U
1-Methylnaphthalene	ND	0.0009	0.010	ug/L							U
Acenaphthylene	ND	0.002	0.010	ug/L							U
Acenaphthene	ND	0.003	0.010	ug/L							U
Dibenzofuran	ND	0.002	0.010	ug/L							U
Fluorene	ND	0.002	0.010	ug/L							U
Phenanthrene	ND	0.001	0.010	ug/L							U
Anthracene	ND	0.001	0.010	ug/L							U
Carbazole	ND	0.001	0.010	ug/L							U
Fluoranthene	ND	0.002	0.010	ug/L							U
Pyrene	ND	0.001	0.010	ug/L							U
Benzo(a)anthracene	ND	0.0008	0.010	ug/L							U
Chrysene	ND	0.0009	0.010	ug/L							U
Benzo(b)fluoranthene	ND	0.0005	0.010	ug/L							U
Benzo(k)fluoranthene	ND	0.003	0.010	ug/L							U
Benzo(j)fluoranthene	ND	0.002	0.010	ug/L							U
Benzofluoranthenes, Total	ND	0.004	0.010	ug/L							U
Benzo(a)pyrene	ND	0.002	0.010	ug/L							U
Perylene	ND	0.006	0.010	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.001	0.010	ug/L							U
Dibenzo(a,h)anthracene	ND	0.001	0.010	ug/L							U
Benzo(g,h,i)perylene	ND	0.001	0.010	ug/L							U
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.186			ug/L	0.300		62.0	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.251			ug/L	0.300		83.8	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.223			ug/L	0.300		74.4	57-120			

LCS (BKH0446-BS1)											
						Prepared: 23-Aug-2022 Analyzed: 03-Sep-2022 11:05					
Naphthalene	0.172	0.001	0.010	ug/L	0.300		57.2	37-120			
2-Methylnaphthalene	0.177	0.001	0.010	ug/L	0.300		59.1	37-120			
1-Methylnaphthalene	0.175	0.0009	0.010	ug/L	0.300		58.2	29-120			
Acenaphthylene	0.183	0.002	0.010	ug/L	0.300		61.0	41-120			
Acenaphthene	0.192	0.003	0.010	ug/L	0.300		63.9	41-120			
Dibenzofuran	0.198	0.002	0.010	ug/L	0.300		65.9	38-120			
Fluorene	0.209	0.002	0.010	ug/L	0.300		69.5	43-120			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKH0446 - EPA 3510C SepF

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0446-BS1)						Prepared: 23-Aug-2022 Analyzed: 03-Sep-2022 11:05					
Phenanthrene	0.202	0.001	0.010	ug/L	0.300		67.3	41-120			
Anthracene	0.202	0.001	0.010	ug/L	0.300		67.3	40-120			
Carbazole	0.218	0.001	0.010	ug/L	0.300		72.7	30-160			
Fluoranthene	0.206	0.002	0.010	ug/L	0.300		68.6	45-120			
Pyrene	0.199	0.001	0.010	ug/L	0.300		66.2	41-120			
Benzo(a)anthracene	0.200	0.0008	0.010	ug/L	0.300		66.6	42-120			
Chrysene	0.209	0.0009	0.010	ug/L	0.300		69.8	44-120			
Benzo(b)fluoranthene	0.205	0.0005	0.010	ug/L	0.300		68.2	44-120			
Benzo(k)fluoranthene	0.234	0.003	0.010	ug/L	0.300		78.0	50-120			
Benzo(j)fluoranthene	0.237	0.002	0.010	ug/L	0.300		78.9	39-160			
Benzofluoranthenes, Total	0.675	0.004	0.010	ug/L	0.900		75.0	46-120			
Benzo(a)pyrene	0.195	0.002	0.010	ug/L	0.300		64.9	35-120			
Perylene	0.213	0.006	0.010	ug/L	0.300		71.1	30-160			
Indeno(1,2,3-cd)pyrene	0.228	0.001	0.010	ug/L	0.300		76.2	37-120			
Dibenzo(a,h)anthracene	0.222	0.001	0.010	ug/L	0.300		74.0	34-120			
Benzo(g,h,i)perylene	0.241	0.001	0.010	ug/L	0.300		80.2	38-120			
Surrogate: 2-Methylnaphthalene-d10	0.192			ug/L	0.300		63.9	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.255			ug/L	0.300		85.1	29-120			
Surrogate: Fluoranthene-d10	0.232			ug/L	0.300		77.2	57-120			
LCS Dup (BKH0446-BS1)						Prepared: 23-Aug-2022 Analyzed: 03-Sep-2022 11:37					
Naphthalene	0.179	0.001	0.010	ug/L	0.300		59.6	37-120	4.15	30	
2-Methylnaphthalene	0.182	0.001	0.010	ug/L	0.300		60.7	37-120	2.82	30	
1-Methylnaphthalene	0.183	0.0009	0.010	ug/L	0.300		60.9	29-120	4.60	30	
Acenaphthylene	0.185	0.002	0.010	ug/L	0.300		61.6	41-120	1.04	30	
Acenaphthene	0.196	0.003	0.010	ug/L	0.300		65.3	41-120	2.15	30	
Dibenzofuran	0.202	0.002	0.010	ug/L	0.300		67.2	38-120	1.87	30	
Fluorene	0.209	0.002	0.010	ug/L	0.300		69.8	43-120	0.38	30	
Phenanthrene	0.206	0.001	0.010	ug/L	0.300		68.7	41-120	2.10	30	
Anthracene	0.204	0.001	0.010	ug/L	0.300		67.9	40-120	0.98	30	
Carbazole	0.221	0.001	0.010	ug/L	0.300		73.7	30-160	1.42	30	
Fluoranthene	0.208	0.002	0.010	ug/L	0.300		69.4	45-120	1.11	30	
Pyrene	0.202	0.001	0.010	ug/L	0.300		67.4	41-120	1.82	30	
Benzo(a)anthracene	0.199	0.0008	0.010	ug/L	0.300		66.4	42-120	0.34	30	
Chrysene	0.211	0.0009	0.010	ug/L	0.300		70.2	44-120	0.63	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKH0446 - EPA 3510C SepF

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKH0446-BSD1)					Prepared: 23-Aug-2022 Analyzed: 03-Sep-2022 11:37						
Benzo(b)fluoranthene	0.208	0.0005	0.010	ug/L	0.300		69.2	44-120	1.40	30	
Benzo(k)fluoranthene	0.236	0.003	0.010	ug/L	0.300		78.7	50-120	0.94	30	
Benzo(j)fluoranthene	0.241	0.002	0.010	ug/L	0.300		80.2	39-160	1.64	30	
Benzofluoranthenes, Total	0.684	0.004	0.010	ug/L	0.900		76.0	46-120	1.32	30	
Benzo(a)pyrene	0.194	0.002	0.010	ug/L	0.300		64.8	35-120	0.12	30	
Perylene	0.220	0.006	0.010	ug/L	0.300		73.3	30-160	3.05	30	
Indeno(1,2,3-cd)pyrene	0.231	0.001	0.010	ug/L	0.300		76.9	37-120	1.02	30	
Dibenzo(a,h)anthracene	0.223	0.001	0.010	ug/L	0.300		74.3	34-120	0.48	30	
Benzo(g,h,i)perylene	0.242	0.001	0.010	ug/L	0.300		80.8	38-120	0.67	30	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.190			ug/L	0.300		63.3	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.246			ug/L	0.300		82.0	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.229			ug/L	0.300		76.3	57-120			



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 07-Sep-2022 17:52
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Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BKH0437 - EPA 3510C SepF

Instrument: FID4 Analyst: AA/CTO

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0437-BLK1)		Prepared: 22-Aug-2022 Analyzed: 31-Aug-2022 16:17								
Diesel Range Organics (C12-C24)	ND	0.100	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L							U
<i>Surrogate: o-Terphenyl</i>	0.252		mg/L	0.225	112		50-150			
LCS (BKH0437-BS1)		Prepared: 22-Aug-2022 Analyzed: 31-Aug-2022 16:37								
Diesel Range Organics (C12-C24)	2.81	0.100	mg/L	3.00		93.5	56-120			
<i>Surrogate: o-Terphenyl</i>	0.257		mg/L	0.225	114		50-150			
LCS Dup (BKH0437-BSD1)		Prepared: 22-Aug-2022 Analyzed: 31-Aug-2022 16:58								
Diesel Range Organics (C12-C24)	2.93	0.100	mg/L	3.00		97.6	56-120	4.26	30	
<i>Surrogate: o-Terphenyl</i>	0.267		mg/L	0.225	119		50-150			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
07-Sep-2022 17:52

Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BKH0435 - EPA 3510C SepF

Instrument: ECD7 Analyst: JGR

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0435-BLK1)						Prepared: 18-Aug-2022 Analyzed: 20-Aug-2022 17:14					
Aroclor 1016	ND	0.002	0.010	ug/L							U
Aroclor 1221	ND	0.002	0.010	ug/L							U
Aroclor 1232	ND	0.002	0.010	ug/L							U
Aroclor 1242	ND	0.002	0.010	ug/L							U
Aroclor 1248	ND	0.002	0.010	ug/L							U
Aroclor 1254	ND	0.002	0.010	ug/L							U
Aroclor 1260	ND	0.003	0.010	ug/L							U
Aroclor 1262	ND	0.003	0.010	ug/L							U
Aroclor 1268	ND	0.003	0.010	ug/L							U
<i>Surrogate: Decachlorobiphenyl</i>	0.0139			ug/L	0.0200	69.5		29-120			
<i>Surrogate: Tetrachlorometaxylene</i>	0.0128			ug/L	0.0200	64.1		32-120			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0131			ug/L	0.0200	65.3		29-120			
<i>Surrogate: Tetrachlorometaxylene [2C]</i>	0.0120			ug/L	0.0200	59.9		32-120			
LCS (BKH0435-BS1)						Prepared: 18-Aug-2022 Analyzed: 20-Aug-2022 17:36					
Aroclor 1016	0.036	0.002	0.010	ug/L	0.0500	71.8		54-120			
Aroclor 1260	0.036	0.003	0.010	ug/L	0.0500	72.6		51-128			
<i>Surrogate: Decachlorobiphenyl</i>	0.0158			ug/L	0.0200	78.9		29-120			
<i>Surrogate: Tetrachlorometaxylene</i>	0.0127			ug/L	0.0200	63.7		32-120			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0166			ug/L	0.0200	82.8		29-120			
<i>Surrogate: Tetrachlorometaxylene [2C]</i>	0.0121			ug/L	0.0200	60.3		32-120			
LCS Dup (BKH0435-BSD1)						Prepared: 18-Aug-2022 Analyzed: 20-Aug-2022 17:57					
Aroclor 1016	0.038	0.002	0.010	ug/L	0.0500	76.3		54-120	6.02	30	
Aroclor 1260	0.037	0.003	0.010	ug/L	0.0500	74.0		51-128	1.89	30	
<i>Surrogate: Decachlorobiphenyl</i>	0.0143			ug/L	0.0200	71.3		29-120			
<i>Surrogate: Tetrachlorometaxylene</i>	0.0135			ug/L	0.0200	67.6		32-120			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.0150			ug/L	0.0200	75.0		29-120			
<i>Surrogate: Tetrachlorometaxylene [2C]</i>	0.0124			ug/L	0.0200	62.1		32-120			



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Project Number: 150218
Project Manager: Zanna Satterwhite

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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKH0656 - REN - EPA 3010A M

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0656-BLK1)						Prepared: 25-Aug-2022 Analyzed: 25-Aug-2022 16:45						
Antimony	121	ND	0.101	0.200	ug/L							U
Antimony	123	ND	0.102	0.200	ug/L							U
Beryllium	9	ND	0.0171	0.200	ug/L							U
Chromium	52	ND	0.260	0.500	ug/L							U
Chromium	53	ND	0.239	0.500	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Silver	107	ND	0.0220	0.200	ug/L							U
Thallium	205	ND	0.0234	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
Cadmium	111	ND	0.0300	0.100	ug/L							U
Cadmium	114	ND	0.0400	0.100	ug/L							U
Copper	63	ND	0.173	0.500	ug/L							U
Copper	65	ND	0.350	0.500	ug/L							U
Nickel	60	ND	0.0792	0.500	ug/L							U
Nickel	62	ND	0.220	0.500	ug/L							U
Selenium	78	ND	0.179	0.500	ug/L							U
Zinc	66	ND	2.92	6.00	ug/L							U
Zinc	67	ND	0.940	6.00	ug/L							U

LCS (BKH0656-BS1)						Prepared: 25-Aug-2022 Analyzed: 25-Aug-2022 16:50						
Antimony	121	24.1	0.101	0.200	ug/L	25.0		96.3	80-120			
Antimony	123	24.5	0.102	0.200	ug/L	25.0		97.8	80-120			
Beryllium	9	23.9	0.0171	0.200	ug/L	25.0		95.7	80-120			
Chromium	52	24.3	0.260	0.500	ug/L	25.0		97.2	80-120			
Chromium	53	25.0	0.239	0.500	ug/L	25.0		99.9	80-120			
Lead	208	25.6	0.0513	0.100	ug/L	25.0		102	80-120			
Silver	107	25.2	0.0220	0.200	ug/L	25.0		101	80-120			
Thallium	205	25.8	0.0234	0.200	ug/L	25.0		103	80-120			
Arsenic	75a	24.5	0.0373	0.200	ug/L	25.0		97.9	80-120			
Cadmium	111	25.4	0.0300	0.100	ug/L	25.0		101	80-120			
Cadmium	114	25.5	0.0400	0.100	ug/L	25.0		102	80-120			
Copper	63	25.7	0.173	0.500	ug/L	25.0		103	80-120			
Copper	65	25.7	0.350	0.500	ug/L	25.0		103	80-120			
Nickel	60	24.9	0.0792	0.500	ug/L	25.0		99.7	80-120			
Nickel	62	24.3	0.220	0.500	ug/L	25.0		97.3	80-120			



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKH0656 - REN - EPA 3010A M

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0656-BS1)						Prepared: 25-Aug-2022		Analyzed: 25-Aug-2022 16:50				
Selenium	78	80.0	0.179	0.500	ug/L	80.0		100	80-120			
Zinc	66	81.9	2.92	6.00	ug/L	80.0		102	80-120			
Zinc	67	74.9	0.940	6.00	ug/L	80.0		93.6	80-120			



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKH0730 - TWM EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0730-BLK1)						Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 11:47					
Mercury	ND	0.000013	0.000100	mg/L							U
LCS (BKH0730-BS1)						Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 11:49					
Mercury	0.00211	0.000013	0.000100	mg/L	0.00200		105	80-120			



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKH0731 - TWM EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0731-BLK1)						Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 12:24					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L							U
LCS (BKH0731-BS1)						Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 12:26					
Mercury, Dissolved	0.00221	0.000013	0.000100	mg/L	0.00200		111	80-120			



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKH0758 - REN - EPA 3010A M

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0758-BLK1)						Prepared: 30-Aug-2022 Analyzed: 30-Aug-2022 19:37						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Antimony, Dissolved	123	ND	0.102	0.200	ug/L							U
Beryllium, Dissolved	9	ND	0.0171	0.200	ug/L							U
Chromium, Dissolved	52	ND	0.260	0.500	ug/L							U
Chromium, Dissolved	53	ND	0.239	0.500	ug/L							U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L							U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L							U
Cadmium, Dissolved	114	ND	0.0400	0.100	ug/L							U
Copper, Dissolved	63	ND	0.173	0.500	ug/L							U
Copper, Dissolved	65	ND	0.350	0.500	ug/L							U
Nickel, Dissolved	60	ND	0.0792	0.500	ug/L							U
Nickel, Dissolved	62	ND	0.220	0.500	ug/L							U
Selenium, Dissolved	78	ND	0.179	0.500	ug/L							U
Zinc, Dissolved	66	ND	2.92	6.00	ug/L							U
Zinc, Dissolved	67	ND	0.940	6.00	ug/L							U

LCS (BKH0758-BS1)						Prepared: 30-Aug-2022 Analyzed: 30-Aug-2022 19:42						
Antimony, Dissolved	121	24.9	0.101	0.200	ug/L	25.0		99.7	80-120			
Antimony, Dissolved	123	25.3	0.102	0.200	ug/L	25.0		101	80-120			
Beryllium, Dissolved	9	23.8	0.0171	0.200	ug/L	25.0		95.2	80-120			
Chromium, Dissolved	52	26.1	0.260	0.500	ug/L	25.0		104	80-120			
Chromium, Dissolved	53	26.3	0.239	0.500	ug/L	25.0		105	80-120			
Lead, Dissolved	208	27.5	0.0513	0.100	ug/L	25.0		110	80-120			
Silver, Dissolved	107	27.8	0.0220	0.200	ug/L	25.0		111	80-120			
Thallium, Dissolved	205	27.0	0.0234	0.200	ug/L	25.0		108	80-120			
Arsenic, Dissolved	75a	24.1	0.0373	0.200	ug/L	25.0		96.5	80-120			
Cadmium, Dissolved	111	26.3	0.0300	0.100	ug/L	25.0		105	80-120			
Cadmium, Dissolved	114	26.5	0.0400	0.100	ug/L	25.0		106	80-120			
Copper, Dissolved	63	26.6	0.173	0.500	ug/L	25.0		106	80-120			
Copper, Dissolved	65	26.6	0.350	0.500	ug/L	25.0		106	80-120			
Nickel, Dissolved	60	25.9	0.0792	0.500	ug/L	25.0		104	80-120			
Nickel, Dissolved	62	25.8	0.220	0.500	ug/L	25.0		103	80-120			



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKH0758 - REN - EPA 3010A M

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0758-BS1)						Prepared: 30-Aug-2022		Analyzed: 30-Aug-2022 19:42				
Selenium, Dissolved	78	80.2	0.179	0.500	ug/L	80.0		100	80-120			
Zinc, Dissolved	66	84.0	2.92	6.00	ug/L	80.0		105	80-120			
Zinc, Dissolved	67	77.9	0.940	6.00	ug/L	80.0		97.4	80-120			



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Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Silver-107	WADOE,WA-DW,DoD-ELAP,NELAP
Beryllium-9	NELAP,WADOE,DoD-ELAP
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-53	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
Antimony-121	NELAP,WADOE,DoD-ELAP
Antimony-123	NELAP
Thallium-205	WADOE,WA-DW,DoD-ELAP,NELAP
Silver-107	WA-DW,DoD-ELAP,NELAP
Beryllium-9	WADOE,DoD-ELAP,NELAP
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-53	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
Antimony-121	NELAP,WADOE,DoD-ELAP
Antimony-123	NELAP,WADOE,DoD-ELAP
Thallium-205	NELAP,WADOE,DoD-ELAP
EPA 6020B UCT-KED in Water	
Arsenic-75a	WADOE,WA-DW,DoD-ELAP,ADEC,NELAP
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Copper-63	NELAP,WADOE,DoD-ELAP
Copper-65	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Nickel-62	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP
Zinc-66	WADOE,WA-DW,DoD-ELAP
Zinc-67	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Copper-63	NELAP,WADOE,DoD-ELAP
Copper-65	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Nickel-62	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP



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Zinc-66 NELAP,WADOE,DoD-ELAP
Zinc-67 NELAP,WADOE,DoD-ELAP

EPA 7470A in Water

Mercury WADOE,NELAP,DoD-ELAP
Mercury WADOE,NELAP,DoD-ELAP

EPA 8082A in Water

Aroclor 1016 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1016 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 [2C] WADOE,DoD-ELAP,NELAP,ADEC

EPA 8260D in Water

Chloromethane DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane DoD-ELAP,ADEC,NELAP,WADOE
Acrolein DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane DoD-ELAP,ADEC,NELAP,WADOE
Acetone DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane DoD-ELAP,NELAP,WADOE
Methylene Chloride DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile DoD-ELAP,NELAP,WADOE
Carbon Disulfide DoD-ELAP,NELAP,WADOE



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trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE



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Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA 8270E in Water

Phenol	NELAP,DoD-ELAP
bis(2-chloroethyl) ether	NELAP,DoD-ELAP
2-Chlorophenol	NELAP,DoD-ELAP
1,3-Dichlorobenzene	NELAP,DoD-ELAP
1,4-Dichlorobenzene	NELAP,DoD-ELAP
1,2-Dichlorobenzene	NELAP,DoD-ELAP
Benzyl Alcohol	NELAP,DoD-ELAP
2,2'-Oxybis(1-chloropropane)	NELAP,DoD-ELAP
2-Methylphenol	NELAP,DoD-ELAP
Hexachloroethane	NELAP,DoD-ELAP
N-Nitroso-di-n-Propylamine	NELAP,DoD-ELAP
4-Methylphenol	NELAP,DoD-ELAP
Nitrobenzene	NELAP,DoD-ELAP
Isophorone	NELAP,DoD-ELAP
2-Nitrophenol	NELAP,DoD-ELAP
2,4-Dimethylphenol	NELAP,DoD-ELAP



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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Bis(2-Chloroethoxy)methane	NELAP,DoD-ELAP
2,4-Dichlorophenol	NELAP,DoD-ELAP
1,2,4-Trichlorobenzene	NELAP,DoD-ELAP
Naphthalene	NELAP,DoD-ELAP
Benzoic acid	NELAP,DoD-ELAP
4-Chloroaniline	NELAP,DoD-ELAP
Hexachlorobutadiene	NELAP,DoD-ELAP
4-Chloro-3-Methylphenol	NELAP,DoD-ELAP
2-Methylnaphthalene	NELAP,DoD-ELAP
Hexachlorocyclopentadiene	NELAP,DoD-ELAP
2,4,6-Trichlorophenol	NELAP,DoD-ELAP
2,4,5-Trichlorophenol	NELAP,DoD-ELAP
2-Chloronaphthalene	NELAP,DoD-ELAP
2-Nitroaniline	NELAP,DoD-ELAP
Acenaphthylene	NELAP,DoD-ELAP
Dimethylphthalate	NELAP,DoD-ELAP
2,6-Dinitrotoluene	NELAP,DoD-ELAP
Acenaphthene	NELAP,DoD-ELAP
3-Nitroaniline	NELAP,DoD-ELAP
2,4-Dinitrophenol	NELAP,DoD-ELAP
Dibenzofuran	NELAP,DoD-ELAP
4-Nitrophenol	NELAP,DoD-ELAP
2,4-Dinitrotoluene	NELAP,DoD-ELAP
Fluorene	NELAP,DoD-ELAP
4-Chlorophenylphenyl ether	NELAP,DoD-ELAP
Diethyl phthalate	NELAP,DoD-ELAP
4-Nitroaniline	NELAP,DoD-ELAP
4,6-Dinitro-2-methylphenol	NELAP,DoD-ELAP
N-Nitrosodiphenylamine	NELAP,DoD-ELAP
4-Bromophenyl phenyl ether	NELAP,DoD-ELAP
Hexachlorobenzene	NELAP,DoD-ELAP
Pentachlorophenol	NELAP,DoD-ELAP
Phenanthrene	NELAP,DoD-ELAP
Anthracene	NELAP,DoD-ELAP
Carbazole	NELAP,DoD-ELAP
Di-n-Butylphthalate	NELAP,DoD-ELAP
Fluoranthene	NELAP,DoD-ELAP
Pyrene	NELAP,DoD-ELAP
Butylbenzylphthalate	NELAP,DoD-ELAP



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Benzo(a)anthracene	NELAP,DoD-ELAP
3,3'-Dichlorobenzidine	NELAP,DoD-ELAP
Chrysene	NELAP,DoD-ELAP
bis(2-Ethylhexyl)phthalate	NELAP,DoD-ELAP
Di-n-Octylphthalate	NELAP,DoD-ELAP
Benzo(b)fluoranthene	NELAP,DoD-ELAP
Benzo(k)fluoranthene	NELAP,DoD-ELAP
Benzo(a)pyrene	NELAP,DoD-ELAP
Indeno(1,2,3-cd)pyrene	NELAP,DoD-ELAP
Dibenzo(a,h)anthracene	NELAP,DoD-ELAP
Benzo(g,h,i)perylene	NELAP,DoD-ELAP
N-Nitrosodimethylamine	NELAP,DoD-ELAP
1-Methylnaphthalene	NELAP,DoD-ELAP

EPA 8270E-SIM in Water

Naphthalene	ADEC,DoD-ELAP,NELAP,WADOE
2-Methylnaphthalene	ADEC,DoD-ELAP,NELAP
1-Methylnaphthalene	ADEC,DoD-ELAP,NELAP,WADOE
Biphenyl	NELAP
Acenaphthylene	ADEC,DoD-ELAP,NELAP,WADOE
Acenaphthene	ADEC,DoD-ELAP,NELAP,WADOE
Dibenzofuran	ADEC,DoD-ELAP,NELAP
Fluorene	ADEC,DoD-ELAP,NELAP,WADOE
Phenanthrene	ADEC,DoD-ELAP,NELAP,WADOE
Anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Carbazole	NELAP
Fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(a)anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Chrysene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(b)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(k)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(j)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(e)pyrene	NELAP
Benzo(a)pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Perylene	ADEC,NELAP
Indeno(1,2,3-cd)pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Dibenzo(a,h)anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(g,h,i)perylene	ADEC,DoD-ELAP,NELAP,WADOE



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NWTPH-Dx in Water

Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023



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Reported:
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Notes and Definitions

- * Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- D1 Surrogate was not detected due to sample extract dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- J Estimated concentration value detected below the reporting limit.
- M Estimated value for a GC/MS analyte detected and confirmed by an analyst but with low spectral match parameters.
- P1 The reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants

09 September 2022

Zanna Satterwhite
Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle, WA 98104

RE: West Duwamish CSO (150218)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
22H0338

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Shelly Fishel, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)
 www.arilabs.com

ARI Assigned Number: 2240338	Turn-around Requested: standard	Page: 1 of 1
ARI Client Company: Aspect Consulting	Phone:	Date: 8/19/22
Client Contact: Janna Sattarwhite		Ice Present?
Client Project Name: West Duwamish CSO		No. of Coolers:
Client Project #: ART 150218	Samplers: Ashley Proxow, Favair Espino	Cooler Temps:

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested								Notes/Comments	
					NW1PH 0x	NW1PH 1x	Metals EPA 200.7/200.0/200.0 A	Dissolved Metals (Held Filtered)	SVOCs	VOCs EPA 4200	SEM PAH-LL 8276D	PUB LL AROCLORS congeners L		
TRIP Blank	7/28/22		W	1	X						X			Hold Aw
MW-1-220818	8/10/22	1005	W	34	X	X	X	X	X	X	X	X	X	Hold
MW-2-220818		1230	W	34										
MW-4-220818		1405	W	17										
MW-6-220818		1555	W	17										
MW-7-220818		1554	W	17										
MW-8-220818		1125	W	17										
MW-X-081822		0100	W	17										
Comments/Special Instructions Metals - Arsenic, Chromium, copper, Lead, Nickel, Zinc, Mercury EPA 7470/2451	Relinquished by: (Signature) <i>Ashley Proxow</i>	Received by: (Signature) <i>Orlo Amos</i>	Relinquished by: (Signature)	Received by: (Signature)										
	Printed Name: Ashley Proxow	Printed Name: Orlo Amos	Printed Name:	Printed Name:										
	Company: Aspect Consulting	Company: ART	Company:	Company:										
	Date & Time: 8/19/22 1046	Date & Time: 8/19/22 1046	Date & Time:	Date & Time:										

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.

Chain of Custody Record & Laboratory Analysis Request



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 Analytical Chemists and Consultants
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 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)
 www.arilabs.com

ARI Assigned Number:	Turn-around Requested: Standard	Page: 1 of 1
ARI Client Company: Aspect Consulting	Phone:	Date: 8/19/22 Ice Present?
Client Contact: Zahra Sulternwhite		No. of Coolers: Cooler Temps:

Client Project Name: West Duwamish CSO	Analysis Requested	Notes/Comments
Client Project #: AR 150218	NW1PH COX NW1PH DX METALS EPA 2007 1200-0 2000-A DISSOLVED METALS (FIELD FILTERED) SVCS VIOS EPA 4200 SEM PATH LL 82-TUD PCB LL ANALYSIS CONGERS LL	RLC congeners - Hold
Samplers: Ashley Proxow, Favour Ewing		

Sample ID	Date	Time	Matrix	No. Containers	NW1PH COX	NW1PH DX	METALS EPA 2007 1200-0 2000-A	DISSOLVED METALS (FIELD FILTERED)	SVCS	VIOS EPA 4200	SEM PATH LL 82-TUD	PCB LL ANALYSIS	CONGERS LL	Notes/Comments
Trip Blank	7/28/22		W	1	X					X				Hold MS/MSD volume
MW-1-220818	8/10/22	1055	W	34	X	X	X	X	X	X	X	X	X	Hold
MW-2-220818		1220	W	17										
MW-4-220818		1405	W	17										
MW-6-220818		1555	W	17										
MW-7-220818		1554	W	17										
MW-8-220818		1125	W	17										
MW-X-081822		0100	W	17										

Comments/Special Instructions Metals - Arsenic, chromium, copper, lead, nickel, zinc, mercury EPA 7470/2451	Relinquished by: (Signature) <i>Ashley Proxow</i>	Received by: (Signature) <i>[Signature]</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Ashley Proxow	Printed Name: antimony, arsenic, beryllium, cadmium, chromium, copper, lead, mercury, nickel, selenium, silver, thallium, and zinc	Printed Name:	Printed Name:
	Company: Aspect Consulting	Company:	Company:	Company:
	Date & Time: 8/19/22	Date & Time:	Date & Time:	Date & Time:

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
Trip Blank	22H0338-01	Water	18-Aug-2022 01:00	19-Aug-2022 10:46
MW-1-220818	22H0338-02	Water	18-Aug-2022 10:55	19-Aug-2022 10:46
MW-1-220818	22H0338-03	Water	18-Aug-2022 10:55	19-Aug-2022 10:46
MW-2-220818	22H0338-04	Water	18-Aug-2022 12:30	19-Aug-2022 10:46
MW-2-220818	22H0338-05	Water	18-Aug-2022 12:30	19-Aug-2022 10:46
MW-4-220818	22H0338-06	Water	18-Aug-2022 14:05	19-Aug-2022 10:46
MW-4-220818	22H0338-07	Water	18-Aug-2022 14:05	19-Aug-2022 10:46
MW-6-220818	22H0338-08	Water	18-Aug-2022 15:55	19-Aug-2022 10:46
MW-6-220818	22H0338-09	Water	18-Aug-2022 15:55	19-Aug-2022 10:46
MW-7-220818	22H0338-10	Water	18-Aug-2022 15:54	19-Aug-2022 10:46
MW-7-220818	22H0338-11	Water	18-Aug-2022 15:54	19-Aug-2022 10:46
MW-8-220818	22H0338-12	Water	18-Aug-2022 11:25	19-Aug-2022 10:46
MW-8-220818	22H0338-13	Water	18-Aug-2022 11:25	19-Aug-2022 10:46
MW-X-220818	22H0338-14	Water	18-Aug-2022 01:00	19-Aug-2022 10:46
MW-X-220818	22H0338-15	Water	18-Aug-2022 01:00	19-Aug-2022 10:46



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Project: West Duwamish CSO
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Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Work Order Case Narrative

Client: Aspect Consulting, LLC.
Project: West Duwamish CSO
Project Number: 150218
Work Order: 22H0338

Sample receipt

Sample(s) as listed on the preceding page were received 19-Aug-2022 10:46 under ARI work order 22H0338. For details regarding sample receipt, please refer to the Cooler Receipt Form.

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.



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The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits except 2-Chloroethyl vinyl ether which was not detected. It was noted that the spike concentration was less than the MDL and was not able to see the recovery.

Semivolatiles - EPA Method SW8270E

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except as follows. Hexachlorocyclopentadiene, 4-Nitrophenol, 4-Bromophenyl phenyl ether, Pentachlorophenol and Di-n-Butylphthalate which were out of control low and Phenol, Nitroso-di-n-Propylamine, 2-Nitroaniline and surrogate Phenol-d5 which were out of control high in the initial calibration verification. All samples which contain analytes have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except Phenol-d5 which was out of control high in the initial calibration verification. All associated samples have been flagged.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits except 4-Chloroaniline which was out of control low and has been flagged.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits except as follows 4-Chloroaniline which was out of control low and Isophorone, 2-Nitroaniline, and 4,6-Dinitro-2-Methylphenol which were out of control high. Additionally 3,3'-Dichlorobenzidine was not detected in the



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Reported:
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MS/MSD. The spike used was less than the MDL and was not able to be read. Deviations have been flagged.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270E-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Total and Dissolved Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Total Dissolved Mercury - EPA Method 7470

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.



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Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.



Cooler Receipt Form

ARI Client: Aspect
 COC No(s): _____ (NA)
 Assigned ARI Job No: 2240338

Project Name: West Duwamish CSC
 Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO
 Were custody papers included with the cooler? YES NO
 Were custody papers properly filled out (ink, signed, etc.) YES NO
 Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1046 0.6 2.2 0.3 1.9 2.6-0.2
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 9708

Cooler Accepted by: Order Amy Date: 8/19/22 Time: 1046

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
 What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
 Was sufficient ice used (if appropriate)? NA YES NO
 How were bottles sealed in plastic bags? Individually Grouped Not
 Did all bottles arrive in good condition (unbroken)? YES NO
 Were all bottle labels complete and legible? YES NO
 Did the number of containers listed on COC match with the number of containers received? HN 8/22 YES NO HN 8/22
 Did all bottle labels and tags agree with custody papers? YES NO
 Were all bottles used correct for the requested analyses? YES NO
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO
 Were all VOC vials free of air bubbles? NA YES NO
 Was sufficient amount of sample sent in each bottle? YES NO
 Date VOC Trip Blank was made at ARI..... (NA) _____
 Were the sample(s) split by ARI? YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: HN Date: 08/22/22 Time: 10:02 Labels checked by: _____

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

HN 8/22 ~~Extra MW-7 VOA vial, one MW-X~~
 VOA vial broken during log in.

By: HN Date: 08/22/22



WORK ORDER

22H0338

Samples will be discarded 90 days after submission of a final report unless other instructions are received.

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

Preservation Confirmation

Container ID	Container Type	pH
22H0338-01 A	VOA Vial, Amber, 40 mL, HCL	
22H0338-02 A	Glass NM, Amber, 1000 mL	
22H0338-02 AA	VOA Vial, Amber, 40 mL, HCL	
22H0338-02 AB	VOA Vial, Amber, 40 mL, HCL	
22H0338-02 AC	VOA Vial, Amber, 40 mL, HCL	
22H0338-02 AD	VOA Vial, Amber, 40 mL, HCL	
22H0338-02 AE	VOA Vial, Amber, 40 mL, HCL	
22H0338-02 AF	VOA Vial, Amber, 40 mL, HCL	
22H0338-02 B	Glass NM, Amber, 1000 mL	
22H0338-02 C	Glass NM, Amber, 1000 mL	
22H0338-02 D	Glass NM, Amber, 1000 mL	
22H0338-02 E	Glass NM, Amber, 500 mL	
22H0338-02 F	Glass NM, Amber, 500 mL	
22H0338-02 G	Glass NM, Amber, 500 mL	
22H0338-02 H	Glass NM, Amber, 500 mL	
22H0338-02 I	Glass NM, Amber, 500 mL	
22H0338-02 J	Glass NM, Amber, 500 mL	
22H0338-02 K	Glass NM, Amber, 500 mL	
22H0338-02 L	Glass NM, Amber, 500 mL	
22H0338-02 M	Glass NM, Amber, 500 mL	
22H0338-02 N	Glass NM, Amber, 500 mL	
22H0338-02 O	Glass NM, Amber, 500 mL	
22H0338-02 P	Glass NM, Amber, 500 mL	
22H0338-02 Q	Glass NM, Amber, 500 mL	
22H0338-02 R	Glass NM, Amber, 500 mL	
22H0338-02 S	Glass NM, Amber, 500 mL	
22H0338-02 T	Glass NM, Amber, 500 mL	
22H0338-02 U	HDPE NM, 500 mL, 1:1 HNO3	42 pass
22H0338-02 V	HDPE NM, 500 mL, 1:1 HNO3	42 pass
22H0338-02 W	VOA Vial, Amber, 40 mL, HCL	
22H0338-02 X	VOA Vial, Amber, 40 mL, HCL	
22H0338-02 Y	VOA Vial, Amber, 40 mL, HCL	
22H0338-02 Z	VOA Vial, Amber, 40 mL, HCL	
22H0338-03 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	42 pass



WORK ORDER

22H0338

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Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

22H0338-03 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<i>2 pass</i>
22H0338-04 A	Glass NM, Amber, 1000 mL	
22H0338-04 B	Glass NM, Amber, 1000 mL	
22H0338-04 C	Glass NM, Amber, 500 mL	
22H0338-04 D	Glass NM, Amber, 500 mL	
22H0338-04 E	Glass NM, Amber, 500 mL	
22H0338-04 F	Glass NM, Amber, 500 mL	
22H0338-04 G	Glass NM, Amber, 500 mL	
22H0338-04 H	Glass NM, Amber, 500 mL	
22H0338-04 I	Glass NM, Amber, 500 mL	
22H0338-04 J	Glass NM, Amber, 500 mL	
22H0338-04 K	HDPE NM, 500 mL, 1:1 HNO3	<i>2 pass</i>
22H0338-04 L	VOA Vial, Amber, 40 mL, HCL	
22H0338-04 M	VOA Vial, Amber, 40 mL, HCL	
22H0338-04 N	VOA Vial, Amber, 40 mL, HCL	
22H0338-04 O	VOA Vial, Amber, 40 mL, HCL	
22H0338-04 P	VOA Vial, Amber, 40 mL, HCL	
22H0338-05 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<i>2 pass</i>
22H0338-06 A	Glass NM, Amber, 1000 mL	
22H0338-06 B	Glass NM, Amber, 1000 mL	
22H0338-06 C	Glass NM, Amber, 500 mL	
22H0338-06 D	Glass NM, Amber, 500 mL	
22H0338-06 E	Glass NM, Amber, 500 mL	
22H0338-06 F	Glass NM, Amber, 500 mL	
22H0338-06 G	Glass NM, Amber, 500 mL	
22H0338-06 H	Glass NM, Amber, 500 mL	
22H0338-06 I	Glass NM, Amber, 500 mL	
22H0338-06 J	Glass NM, Amber, 500 mL	
22H0338-06 K	HDPE NM, 500 mL, 1:1 HNO3	<i>2 pass</i>
22H0338-06 L	VOA Vial, Amber, 40 mL, HCL	
22H0338-06 M	VOA Vial, Amber, 40 mL, HCL	
22H0338-06 N	VOA Vial, Amber, 40 mL, HCL	
22H0338-06 O	VOA Vial, Amber, 40 mL, HCL	
22H0338-06 P	VOA Vial, Amber, 40 mL, HCL	
22H0338-07 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<i>2 pass</i>
22H0338-08 A	Glass NM, Amber, 1000 mL	



WORK ORDER

22H0338

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Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

22H0338-08 B	Glass NM, Amber, 1000 mL	
22H0338-08 C	Glass NM, Amber, 500 mL	
22H0338-08 D	Glass NM, Amber, 500 mL	
22H0338-08 E	Glass NM, Amber, 500 mL	
22H0338-08 F	Glass NM, Amber, 500 mL	
22H0338-08 G	Glass NM, Amber, 500 mL	
22H0338-08 H	Glass NM, Amber, 500 mL	
22H0338-08 I	Glass NM, Amber, 500 mL	
22H0338-08 J	Glass NM, Amber, 500 mL	
22H0338-08 K	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
22H0338-08 L	VOA Vial, Amber, 40 mL, HCL	
22H0338-08 M	VOA Vial, Amber, 40 mL, HCL	
22H0338-08 N	VOA Vial, Amber, 40 mL, HCL	
22H0338-08 O	VOA Vial, Amber, 40 mL, HCL	
22H0338-08 P	VOA Vial, Amber, 40 mL, HCL	
22H0338-09 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 pass
22H0338-10 A	Glass NM, Amber, 1000 mL	
22H0338-10 B	Glass NM, Amber, 1000 mL	
22H0338-10 C	Glass NM, Amber, 500 mL	
22H0338-10 D	Glass NM, Amber, 500 mL	
22H0338-10 E	Glass NM, Amber, 500 mL	
22H0338-10 F	Glass NM, Amber, 500 mL	
22H0338-10 G	Glass NM, Amber, 500 mL	
22H0338-10 H	Glass NM, Amber, 500 mL	
22H0338-10 I	Glass NM, Amber, 500 mL	
22H0338-10 J	Glass NM, Amber, 500 mL	
22H0338-10 K	HDPE NM, 500 mL, 1:1 HNO3	L2 pass
22H0338-10 L	VOA Vial, Amber, 40 mL, HCL	
22H0338-10 M	VOA Vial, Amber, 40 mL, HCL	
22H0338-10 N	VOA Vial, Amber, 40 mL, HCL	
22H0338-10 O	VOA Vial, Amber, 40 mL, HCL	
22H0338-10 P	VOA Vial, Amber, 40 mL, HCL	
22H0338-11 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 pass
22H0338-12 A	Glass NM, Amber, 1000 mL	
22H0338-12 B	Glass NM, Amber, 1000 mL	
22H0338-12 C	Glass NM, Amber, 500 mL	



WORK ORDER

22H0338

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Client: Aspect Consulting, LLC.	Project Manager: Shelly Fishel
Project: West Duwamish CSO	Project Number: 150218

22H0338-12 D	Glass NM, Amber, 500 mL	
22H0338-12 E	Glass NM, Amber, 500 mL	
22H0338-12 F	Glass NM, Amber, 500 mL	
22H0338-12 G	Glass NM, Amber, 500 mL	
22H0338-12 H	Glass NM, Amber, 500 mL	
22H0338-12 I	Glass NM, Amber, 500 mL	
22H0338-12 J	Glass NM, Amber, 500 mL	
22H0338-12 K	HDPE NM, 500 mL, 1:1 HNO3	<i>C2 pass</i>
22H0338-12 L	VOA Vial, Amber, 40 mL, HCL	
22H0338-12 M	VOA Vial, Amber, 40 mL, HCL	
22H0338-12 N	VOA Vial, Amber, 40 mL, HCL	
22H0338-12 O	VOA Vial, Amber, 40 mL, HCL	
22H0338-12 P	VOA Vial, Amber, 40 mL, HCL	
22H0338-13 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<i>C2 pass</i>
22H0338-14 A	Glass NM, Amber, 1000 mL	
22H0338-14 B	Glass NM, Amber, 1000 mL	
22H0338-14 C	Glass NM, Amber, 500 mL	
22H0338-14 D	Glass NM, Amber, 500 mL	
22H0338-14 E	Glass NM, Amber, 500 mL	
22H0338-14 F	Glass NM, Amber, 500 mL	
22H0338-14 G	Glass NM, Amber, 500 mL	
22H0338-14 H	Glass NM, Amber, 500 mL	
22H0338-14 I	Glass NM, Amber, 500 mL	
22H0338-14 J	Glass NM, Amber, 500 mL	
22H0338-14 K	HDPE NM, 500 mL, 1:1 HNO3	<i>C2 pass</i>
22H0338-14 L	VOA Vial, Amber, 40 mL, HCL	
22H0338-14 M	VOA Vial, Amber, 40 mL, HCL	
22H0338-14 N	VOA Vial, Amber, 40 mL, HCL	
22H0338-14 O	VOA Vial, Amber, 40 mL, HCL	
22H0338-15 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<i>C2 pass</i>

HU

Preservation Confirmed By

08/22/22

Date



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Trip Blank
22H0338-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 15:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKH0522
Prepared: 08/22/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22H0338-01 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Trip Blank
22H0338-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 15:54

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Trip Blank
22H0338-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 15:54

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				<i>80-129 %</i>	<i>103</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>				<i>80-120 %</i>	<i>97.6</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>94.8</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				<i>80-120 %</i>	<i>101</i>	<i>%</i>	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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Trip Blank
22H0338-01 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 08/18/2022 01:00
Instrument: NT2 Analyst: PKC Analyzed: 08/22/2022 15:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22H0338-01 A
Preparation Batch: BKH0522 Sample Size: 10 mL
Prepared: 08/22/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	94.8	%	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-1-220818
22H0338-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 10:55

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 16:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKH0522
Prepared: 08/22/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22H0338-02 X

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.12	ug/L	J



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-1-220818
22H0338-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 10:55

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 16:15

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-1-220818
22H0338-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 10:55

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 16:15

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	105	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	97.9	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	95.8	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	102	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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MW-1-220818
22H0338-02 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 08/18/2022 10:55
Instrument: NT2 Analyst: PKC Analyzed: 08/22/2022 16:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22H0338-02 X
Preparation Batch: BKH0522 Sample Size: 10 mL
Prepared: 08/22/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.9	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	95.8	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-1-220818
22H0338-02 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 10:55

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 17:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0586
Prepared: 08/25/2022

Sample Size: 865 mL
Final Volume: 1 mL

Extract ID: 22H0338-02 D 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.04	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.04	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.03	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.04	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.2	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.2	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.2	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.04	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.2	2.3	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.05	1.2	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.2	1.2	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.2	1.2	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.2	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.2	1.2	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.2	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.2	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-1-220818
22H0338-02 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 10:55

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 17:16

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.2	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.3	2.3	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.2	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.2	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.07	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.2	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.3	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.2	1.2	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.06	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.04	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.04	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.08	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.4	1.2	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.09	0.5	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.06	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.08	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.05	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	57.6 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	42.0 %	Q
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	80.9 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	57.8 %	
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	104 %	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-1-220818
22H0338-02 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 10:55

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 17:16

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	80.7	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	127	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	99.4	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-1-220818
22H0338-02 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 08/18/2022 10:55

Instrument: NT18 Analyst: VTS

Analyzed: 09/08/2022 13:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0587
Prepared: 08/25/2022

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 22H0338-02 I 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.006	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.002	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.001	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	0.001	ug/L	J
Chrysene	218-01-9	1	0.0009	0.010	0.002	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.001	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	0.001	ug/L	J
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	0.002	ug/L	J
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	0.002	ug/L	J

Surrogate: 2-Methylnaphthalene-d10

42-120 % 66.7 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 94.8 %

Surrogate: Fluoranthene-d10

57-120 % 81.9 %



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MW-1-220818
22H0338-02 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 08/18/2022 10:55
Instrument: FID3 Analyst: JGR Analyzed: 09/01/2022 21:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22H0338-02 L 01
Preparation Batch: BKH0588 Sample Size: 500 mL
Prepared: 08/25/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	109	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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MW-1-220818
22H0338-02 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 08/18/2022 10:55
Instrument: ECD7 Analyst: JGR Analyzed: 08/28/2022 08:25

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKH0585 Prepared: 08/25/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22H0338-02 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKH0229 Cleansed: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-02 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKH0230 Cleansed: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-02 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKH0228 Cleansed: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-02 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	81.6 %
Surrogate: Tetrachlorometaxylene	32-120 %	65.9 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	89.3 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	61.1 %



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MW-1-220818
22H0338-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 08/18/2022 10:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 05:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-02 U 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	0.0620	ug/L	J
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 08/31/2022 23:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-02 U 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium	7440-41-7	2	0.0342	0.400	0.0520	ug/L	J, D
Chromium	7440-47-3	2	0.520	1.00	2.31	ug/L	D



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MW-1-220818
22H0338-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 08/18/2022 10:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 05:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-02 U 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.454	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.423	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.242	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.248	ug/L	J
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-1-220818
22H0338-02 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 08/18/2022 10:55
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 11:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-02 V
Preparation Batch: BKH0730 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-1-220818
22H0338-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 08/18/2022 10:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 06:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-03 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	0.0260	ug/L	J
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 08/31/2022 23:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-03 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium, Dissolved	7440-41-7	2	0.0342	0.400	0.0620	ug/L	J, D
Chromium, Dissolved	7440-47-3	2	0.520	1.00	2.86	ug/L	D



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Project Manager: Zanna Satterwhite

Reported:
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MW-1-220818
22H0338-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED

Sampled: 08/18/2022 10:55

Instrument: ICPMS1 Analyst: MCB

Analyzed: 08/31/2022 06:12

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22H0338-03 A 01

Preparation Batch: BKH0758

Sample Size: 25 mL

Prepared: 08/30/2022

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.397	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.489	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.243	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-1-220818
22H0338-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 08/18/2022 10:55
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-03 B
Preparation Batch: BKH0731 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-1-220818
22H0338-03RE1 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 08/18/2022 10:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 09/02/2022 18:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-03RE1 B 01
Preparation Batch: BKI0051 Sample Size: 25 mL
Prepared: 09/02/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Lead, Dissolved	7439-92-1	1	0.0513	0.100	0.286	ug/L	



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Project Manager: Zanna Satterwhite

Reported:
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MW-2-220818
22H0338-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 12:30

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 16:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKH0522
Prepared: 08/22/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22H0338-04 M

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project Number: 150218
Project Manager: Zanna Satterwhite

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MW-2-220818
22H0338-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 12:30

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 16:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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MW-2-220818
22H0338-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 08/18/2022 12:30
Instrument: NT2 Analyst: PKC Analyzed: 08/22/2022 16:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	104	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	96.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	91.2	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	101	%	



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MW-2-220818
22H0338-04 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 08/18/2022 12:30
Instrument: NT2 Analyst: PKC Analyzed: 08/22/2022 16:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22H0338-04 M
Preparation Batch: BKH0522 Sample Size: 10 mL
Prepared: 08/22/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	91.2	%	



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Project Manager: Zanna Satterwhite

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MW-2-220818
22H0338-04 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 12:30

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 19:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0586
Prepared: 08/25/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22H0338-04 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	0.3	ug/L	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-2-220818
22H0338-04 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 12:30

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 19:16

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>56.4 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>39.1 %</i>	Q
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>83.9 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>39.7 %</i>	
<i>Surrogate: Nitrobenzene-d5</i>					<i>30-160 %</i>	<i>91.9 %</i>	



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MW-2-220818
22H0338-04 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 08/18/2022 12:30
Instrument: NT10 Analyst: VTS Analyzed: 08/30/2022 19:16

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	59.3	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	125	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	96.9	%	



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MW-2-220818
22H0338-04 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 08/18/2022 12:30

Instrument: NT18 Analyst: VTS

Analyzed: 09/08/2022 15:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0587
Prepared: 08/25/2022

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 22H0338-04 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.005	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.002	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.001	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	0.253	ug/L	
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.001	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 69.1 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 94.0 %

Surrogate: Fluoranthene-d10

57-120 % 81.9 %



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MW-2-220818
22H0338-04 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 08/18/2022 12:30
Instrument: FID3 Analyst: JGR Analyzed: 09/01/2022 22:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22H0338-04 D 01
Preparation Batch: BKH0588 Sample Size: 500 mL
Prepared: 08/25/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	111	%	



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MW-2-220818
22H0338-04 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 08/18/2022 12:30

Instrument: ECD7 Analyst: JGR

Analyzed: 08/28/2022 09:29

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKH0585 Prepared: 08/25/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22H0338-04 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKH0229 Cleaned: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-04 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKH0230 Cleaned: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-04 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKH0228 Cleaned: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-04 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	61.6	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	69.4	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	63.6	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	66.2	%



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MW-2-220818
22H0338-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 08/18/2022 12:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-04 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 08/31/2022 23:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-04 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Chromium	7440-47-3	2	0.520	1.00	0.838	ug/L	J, D



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MW-2-220818
22H0338-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 08/18/2022 12:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-04 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.132	ug/L	J
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel	7440-02-0	1	0.0792	0.500	0.114	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.328	ug/L	J
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-2-220818
22H0338-04 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 08/18/2022 12:30
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-04 K
Preparation Batch: BKH0730 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-2-220818
22H0338-05 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 08/18/2022 12:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 06:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-05 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 09/01/2022 01:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-05 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium, Dissolved	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Chromium, Dissolved	7440-47-3	2	0.520	1.00	0.762	ug/L	J, D



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MW-2-220818
22H0338-05 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED

Sampled: 08/18/2022 12:30

Instrument: ICPMS1 Analyst: MCB

Analyzed: 08/31/2022 06:50

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22H0338-05 A 01

Preparation Batch: BKH0758

Sample Size: 25 mL

Prepared: 08/30/2022

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.120	ug/L	J
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.127	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.204	ug/L	J
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-2-220818
22H0338-05 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 08/18/2022 12:30
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-05 A
Preparation Batch: BKH0731 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Reported:
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MW-4-220818
22H0338-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 14:05

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 16:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKH0522
Prepared: 08/22/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22H0338-06 L

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.14	ug/L	J



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Project Manager: Zanna Satterwhite

Reported:
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MW-4-220818
22H0338-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 14:05

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 16:57

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-4-220818
22H0338-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 14:05

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 16:57

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	106	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	99.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	92.8	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	102	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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MW-4-220818
22H0338-06 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 08/18/2022 14:05
Instrument: NT2 Analyst: PKC Analyzed: 08/22/2022 16:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22H0338-06 L
Preparation Batch: BKH0522 Sample Size: 10 mL
Prepared: 08/22/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	92.8	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-4-220818
22H0338-06 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 14:05

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 19:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0586
Prepared: 08/25/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22H0338-06 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-4-220818
22H0338-06 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 14:05

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 19:56

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	47.6 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	33.9 %	Q
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	69.8 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	31.4 %	
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	88.3 %	



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-4-220818
22H0338-06 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 14:05

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 19:56

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	49.1	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	126	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	97.1	%	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-4-220818
22H0338-06 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 08/18/2022 14:05

Instrument: NT18 Analyst: VTS

Analyzed: 09/08/2022 15:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0587
Prepared: 08/25/2022

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 22H0338-06 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.006	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.002	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.001	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 69.8 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 95.4 %

Surrogate: Fluoranthene-d10

57-120 % 84.2 %



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MW-4-220818
22H0338-06 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 08/18/2022 14:05
Instrument: FID3 Analyst: JGR Analyzed: 09/01/2022 23:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22H0338-06 D 01
Preparation Batch: BKH0588 Sample Size: 500 mL
Prepared: 08/25/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			<i>50-150 %</i>	<i>110</i>	<i>%</i>	



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MW-4-220818
22H0338-06 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 08/18/2022 14:05
Instrument: ECD7 Analyst: JGR Analyzed: 08/28/2022 09:51

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKH0585 Prepared: 08/25/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22H0338-06 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKH0229 Cleansed: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-06 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKH0230 Cleansed: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-06 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKH0228 Cleansed: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-06 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	69.7 %
Surrogate: Tetrachlorometaxylene	32-120 %	68.2 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	76.3 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	65.3 %



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-4-220818
22H0338-06 (Water)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 08/18/2022 14:05

Instrument: ICPMS1 Analyst: MCB

Analyzed: 08/31/2022 07:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M
Preparation Batch: BKH0759
Prepared: 08/30/2022

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 22H0338-06 K 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB

Analyzed: 09/01/2022 00:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M
Preparation Batch: BKH0759
Prepared: 08/30/2022

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 22H0338-06 K 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U



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MW-4-220818
22H0338-06 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 08/18/2022 14:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-06 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.229	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel	7440-02-0	1	0.0792	0.500	0.181	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-4-220818
22H0338-06 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 08/18/2022 14:05
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-06 K
Preparation Batch: BKH0730 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-4-220818
22H0338-07 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 08/18/2022 14:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 06:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-07 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 09/01/2022 00:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-07 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U



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MW-4-220818
22H0338-07 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 08/18/2022 14:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 06:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-07 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.230	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.168	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-4-220818
22H0338-07 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 08/18/2022 14:05
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-07 A
Preparation Batch: BKH0731 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-6-220818
22H0338-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 15:55

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 17:18

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 22H0338-08 L

Preparation Batch: BKH0522

Sample Size: 10 mL

Prepared: 08/22/2022

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	0.14	ug/L	J
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.16	ug/L	J



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-6-220818
22H0338-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 15:55

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 17:18

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-6-220818
22H0338-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 15:55

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 17:18

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	102	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	97.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	89.7	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	102	%	



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MW-6-220818
22H0338-08 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 08/18/2022 15:55
Instrument: NT2 Analyst: PKC Analyzed: 08/22/2022 17:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22H0338-08 L
Preparation Batch: BKH0522 Sample Size: 10 mL
Prepared: 08/22/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	89.7	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-6-220818
22H0338-08 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 15:55

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 20:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0586
Prepared: 08/25/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22H0338-08 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	0.03	ug/L	J
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	0.07	ug/L	J
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-6-220818
22H0338-08 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 15:55

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 20:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	0.06	ug/L	J
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>54.7 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>39.9 %</i>	Q
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>80.6 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>37.1 %</i>	
<i>Surrogate: Nitrobenzene-d5</i>					<i>30-160 %</i>	<i>89.0 %</i>	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-6-220818
22H0338-08 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 15:55

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 20:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	51.8	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	128	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	102	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-6-220818
22H0338-08 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 08/18/2022 15:55

Instrument: NT18 Analyst: VTS

Analyzed: 09/08/2022 16:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0587
Prepared: 08/25/2022

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 22H0338-08 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.005	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.001	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.001	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 67.8 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 95.7 %

Surrogate: Fluoranthene-d10

57-120 % 84.1 %



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MW-6-220818
22H0338-08 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 08/18/2022 15:55
Instrument: FID3 Analyst: JGR Analyzed: 09/01/2022 23:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22H0338-08 D 01
Preparation Batch: BKH0588 Sample Size: 500 mL
Prepared: 08/25/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	110	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-6-220818
22H0338-08 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 08/18/2022 15:55
Instrument: ECD7 Analyst: JGR Analyzed: 08/28/2022 10:12

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKH0585 Prepared: 08/25/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22H0338-08 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKH0229 Cleansed: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-08 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKH0230 Cleansed: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-08 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKH0228 Cleansed: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-08 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	82.8	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	69.1	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	88.6	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	65.6	%



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MW-6-220818
22H0338-08 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 08/18/2022 15:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-08 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 09/01/2022 01:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-08 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium	7440-41-7	2	0.0342	0.400	0.0380	ug/L	J, D
Chromium	7440-47-3	2	0.520	1.00	0.572	ug/L	J, D



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MW-6-220818
22H0338-08 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 08/18/2022 15:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-08 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	3.10	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.715	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	1.56	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-6-220818
22H0338-08 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 08/18/2022 15:55
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-08 K
Preparation Batch: BKH0730 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-6-220818
22H0338-09 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 08/18/2022 15:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-09 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	0.0560	ug/L	J
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 09/01/2022 01:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-09 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium, Dissolved	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Chromium, Dissolved	7440-47-3	2	0.520	1.00	0.530	ug/L	J, D



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MW-6-220818
22H0338-09 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 08/18/2022 15:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-09 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	3.19	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.475	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	1.56	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-6-220818
22H0338-09 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 08/18/2022 15:55
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-09 A
Preparation Batch: BKH0731 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-7-220818
22H0338-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 15:54

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 17:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKH0522
Prepared: 08/22/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22H0338-10 M

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.12	ug/L	J



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-7-220818
22H0338-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 15:54

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 17:39

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-7-220818
22H0338-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 15:54

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 17:39

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	109	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	98.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	91.4	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	105	%	



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MW-7-220818
22H0338-10 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 08/18/2022 15:54
Instrument: NT2 Analyst: PKC Analyzed: 08/22/2022 17:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22H0338-10 M
Preparation Batch: BKH0522 Sample Size: 10 mL
Prepared: 08/22/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	91.4	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-7-220818
22H0338-10 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 15:54

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 21:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0586
Prepared: 08/25/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22H0338-10 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-7-220818
22H0338-10 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 15:54

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 21:15

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	49.9 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	35.8 %	Q
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	72.2 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	38.6 %	
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	93.7 %	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-7-220818
22H0338-10 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 15:54

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 21:15

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	66.8	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	122	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	96.5	%	



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-7-220818
22H0338-10 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 08/18/2022 15:54

Instrument: NT18 Analyst: VTS

Analyzed: 09/08/2022 17:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0587
Prepared: 08/25/2022

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 22H0338-10 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.009	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.003	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	0.002	ug/L	J
Phenanthrene	85-01-8	1	0.001	0.010	0.003	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 62.1 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 91.4 %

Surrogate: Fluoranthene-d10

57-120 % 78.6 %



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MW-7-220818
22H0338-10 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 08/18/2022 15:54
Instrument: FID3 Analyst: JGR Analyzed: 09/01/2022 23:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22H0338-10 D 01
Preparation Batch: BKH0588 Sample Size: 500 mL
Prepared: 08/25/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	107	%	



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Project: West Duwamish CSO
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Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-7-220818
22H0338-10 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 08/18/2022 15:54

Instrument: ECD7 Analyst: JGR

Analyzed: 08/28/2022 10:33

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKH0585 Prepared: 08/25/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22H0338-10 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKH0229 Cleaned: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-10 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKH0230 Cleaned: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-10 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKH0228 Cleaned: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-10 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	78.5	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	65.6	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	81.6	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	61.1	%



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-7-220818
22H0338-10 (Water)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 08/18/2022 15:54

Instrument: ICPMS1 Analyst: MCB

Analyzed: 08/31/2022 07:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Sample Size: 25 mL Extract ID: 22H0338-10 K 01
Preparation Batch: BKH0759 Final Volume: 25 mL
Prepared: 08/30/2022

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB

Analyzed: 09/01/2022 00:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Sample Size: 25 mL Extract ID: 22H0338-10 K 01
Preparation Batch: BKH0759 Final Volume: 25 mL
Prepared: 08/30/2022

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U



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MW-7-220818
22H0338-10 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 08/18/2022 15:54
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-10 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.582	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	2.50	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	2.61	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-7-220818
22H0338-10 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 08/18/2022 15:54
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-10 K
Preparation Batch: BKH0730 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-7-220818
22H0338-11 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 08/18/2022 15:54
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-11 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.111	ug/L	J
Chromium, Dissolved	7440-47-3	1	0.260	0.500	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 09/01/2022 00:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-11 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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MW-7-220818
22H0338-11 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 08/18/2022 15:54
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-11 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.553	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	0.0310	ug/L	J
Copper, Dissolved	7440-50-8	1	0.173	0.500	2.45	ug/L	
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	2.54	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-7-220818
22H0338-11 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 08/18/2022 15:54
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-11 A
Preparation Batch: BKH0731 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-8-220818
22H0338-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 11:25

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 18:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKH0522
Prepared: 08/22/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22H0338-12 L

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	0.41	ug/L	
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.06	ug/L	J



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-8-220818
22H0338-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 11:25

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 18:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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MW-8-220818
22H0338-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 08/18/2022 11:25
Instrument: NT2 Analyst: PKC Analyzed: 08/22/2022 18:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				<i>80-129 %</i>	<i>109</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>				<i>80-120 %</i>	<i>97.8</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>92.7</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				<i>80-120 %</i>	<i>102</i>	<i>%</i>	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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MW-8-220818
22H0338-12 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 08/18/2022 11:25
Instrument: NT2 Analyst: PKC Analyzed: 08/22/2022 18:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22H0338-12 L
Preparation Batch: BKH0522 Sample Size: 10 mL
Prepared: 08/22/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	92.7	%	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-8-220818
22H0338-12 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 11:25

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 21:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0586
Prepared: 08/25/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22H0338-12 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-8-220818
22H0338-12 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 11:25

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 21:55

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>60.6 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>44.0 %</i>	Q
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>86.1 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>59.2 %</i>	
<i>Surrogate: Nitrobenzene-d5</i>					<i>30-160 %</i>	<i>98.9 %</i>	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-8-220818
22H0338-12 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 11:25

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 21:55

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	78.1	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	126	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	100	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-8-220818
22H0338-12 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 08/18/2022 11:25

Instrument: NT18 Analyst: VTS

Analyzed: 09/08/2022 17:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0587
Prepared: 08/25/2022

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 22H0338-12 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.004	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.001	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.0009	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.002	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 69.6 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 93.3 %

Surrogate: Fluoranthene-d10

57-120 % 82.2 %



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MW-8-220818
22H0338-12 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 08/18/2022 11:25
Instrument: FID3 Analyst: JGR Analyzed: 09/02/2022 00:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22H0338-12 D 01
Preparation Batch: BKH0588 Sample Size: 500 mL
Prepared: 08/25/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			<i>50-150 %</i>	<i>111</i>	<i>%</i>	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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MW-8-220818
22H0338-12 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 08/18/2022 11:25
Instrument: ECD7 Analyst: JGR Analyzed: 08/28/2022 11:38

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKH0585 Prepared: 08/25/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22H0338-12 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKH0229 Cleaned: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-12 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKH0230 Cleaned: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-12 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKH0228 Cleaned: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-12 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	57.1 %
Surrogate: Tetrachlorometaxylene	32-120 %	53.4 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	54.7 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	49.5 %



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MW-8-220818
22H0338-12 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 08/18/2022 11:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-12 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	0.402	ug/L	J
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 09/01/2022 00:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-12 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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MW-8-220818
22H0338-12 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 08/18/2022 11:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-12 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.28	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.359	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.370	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.181	ug/L	J
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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MW-8-220818
22H0338-12 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 08/18/2022 11:25
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-12 K
Preparation Batch: BKH0730 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-8-220818
22H0338-13 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 08/18/2022 11:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-13 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	1	0.260	0.500	0.419	ug/L	J
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 09/01/2022 00:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-13 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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MW-8-220818
22H0338-13 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 08/18/2022 11:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-13 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.23	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	1.49	ug/L	
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.304	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-8-220818
22H0338-13 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 08/18/2022 11:25
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-13 A
Preparation Batch: BKH0731 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-X-220818
22H0338-14 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 18:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKH0522
Prepared: 08/22/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22H0338-14 M

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.10	ug/L	J



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-X-220818
22H0338-14 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 18:21

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-X-220818
22H0338-14 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 08/18/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 08/22/2022 18:21

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	106	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	98.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	93.5	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	103	%	



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MW-X-220818
22H0338-14 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 08/18/2022 01:00
Instrument: NT2 Analyst: PKC Analyzed: 08/22/2022 18:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22H0338-14 M
Preparation Batch: BKH0522 Sample Size: 10 mL
Prepared: 08/22/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	93.5	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-X-220818
22H0338-14 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 01:00

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 22:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0586
Prepared: 08/25/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22H0338-14 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	0.2	ug/L	



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-X-220818
22H0338-14 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 01:00

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 22:34

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	0.5	ug/L	
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	56.7 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	41.7 %	Q
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	78.1 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	61.5 %	
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	102 %	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

MW-X-220818
22H0338-14 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 08/18/2022 01:00

Instrument: NT10 Analyst: VTS

Analyzed: 08/30/2022 22:34

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	86.2	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	140	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	110	%	



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Reported:
09-Sep-2022 15:20

MW-X-220818
22H0338-14 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 08/18/2022 01:00

Instrument: NT18 Analyst: VTS

Analyzed: 09/08/2022 18:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKH0587
Prepared: 08/25/2022

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 22H0338-14 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.005	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.002	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.001	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	0.200	ug/L	
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.002	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 70.2 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 94.1 %

Surrogate: Fluoranthene-d10

57-120 % 83.2 %



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MW-X-220818
22H0338-14 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 08/18/2022 01:00
Instrument: FID3 Analyst: JGR Analyzed: 09/02/2022 00:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22H0338-14 D 01
Preparation Batch: BKH0588 Sample Size: 500 mL
Prepared: 08/25/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	109	%	



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Reported:
09-Sep-2022 15:20

MW-X-220818
22H0338-14 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 08/18/2022 01:00

Instrument: ECD7 Analyst: JGR

Analyzed: 08/28/2022 11:59

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKH0585 Prepared: 08/25/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22H0338-14 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKH0229 Cleansed: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-14 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKH0230 Cleansed: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-14 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKH0228 Cleansed: 27-Aug-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22H0338-14 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	66.2 %
Surrogate: Tetrachlorometaxylene	32-120 %	69.0 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	68.1 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	63.1 %



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MW-X-220818
22H0338-14 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 08/18/2022 01:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-14 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 09/01/2022 01:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-14 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Chromium	7440-47-3	2	0.520	1.00	0.864	ug/L	J, D



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MW-X-220818
22H0338-14 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 08/18/2022 01:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-14 K 01
Preparation Batch: BKH0759 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.118	ug/L	J
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel	7440-02-0	1	0.0792	0.500	0.109	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.256	ug/L	J
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-X-220818
22H0338-14 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 08/18/2022 01:00
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-14 K
Preparation Batch: BKH0730 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-X-220818
22H0338-15 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 08/18/2022 01:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 08/31/2022 07:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-15 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: MCB Analyzed: 09/01/2022 01:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22H0338-15 A 01
Preparation Batch: BKH0758 Sample Size: 25 mL
Prepared: 08/30/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Beryllium, Dissolved	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Chromium, Dissolved	7440-47-3	2	0.520	1.00	0.846	ug/L	J, D



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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MW-X-220818
22H0338-15 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED

Sampled: 08/18/2022 01:00

Instrument: ICPMS1 Analyst: MCB

Analyzed: 08/31/2022 07:15

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22H0338-15 A 01

Preparation Batch: BKH0758

Sample Size: 25 mL

Prepared: 08/30/2022

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.137	ug/L	J
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.0890	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.267	ug/L	J
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-X-220818
22H0338-15 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 08/18/2022 01:00
Instrument: HYDRA Analyst: ML Analyzed: 09/01/2022 12:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22H0338-15 A
Preparation Batch: BKH0731 Sample Size: 20 mL
Prepared: 08/29/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0522-BLK1)		Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 10:42								
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.93		ug/L	5.00	98.7		80-120			
Surrogate: 4-Bromofluorobenzene	4.68		ug/L	5.00	93.7		80-120			
Blank (BKH0522-BLK2)		Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 10:42								
Chloromethane	ND	0.27	0.50	ug/L						U
Vinyl Chloride	ND	0.08	0.20	ug/L						U
Bromomethane	ND	0.74	1.00	ug/L						U
Chloroethane	ND	0.18	0.20	ug/L						U
Trichlorofluoromethane	ND	0.13	0.20	ug/L						U
Acrolein	ND	2.70	5.00	ug/L						U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.11	0.20	ug/L						U
Acetone	ND	4.33	5.00	ug/L						U
1,1-Dichloroethene	ND	0.08	0.20	ug/L						U
Iodomethane	ND	0.43	1.00	ug/L						U
Methylene Chloride	ND	0.53	1.00	ug/L						U
Acrylonitrile	ND	0.40	1.00	ug/L						U
Carbon Disulfide	ND	0.12	0.20	ug/L						U
trans-1,2-Dichloroethene	ND	0.07	0.20	ug/L						U
Vinyl Acetate	ND	0.12	0.20	ug/L						U
1,1-Dichloroethane	ND	0.09	0.20	ug/L						U
2-Butanone	ND	1.77	5.00	ug/L						U
2,2-Dichloropropane	ND	0.11	0.20	ug/L						U
cis-1,2-Dichloroethene	ND	0.08	0.20	ug/L						U
Chloroform	ND	0.05	0.20	ug/L						U
Bromochloromethane	ND	0.09	0.20	ug/L						U
1,1,1-Trichloroethane	ND	0.08	0.20	ug/L						U
1,1-Dichloropropene	ND	0.09	0.20	ug/L						U
Carbon tetrachloride	ND	0.09	0.20	ug/L						U
1,2-Dichloroethane	ND	0.08	0.20	ug/L						U
Benzene	ND	0.05	0.20	ug/L						U
Trichloroethene	ND	0.07	0.20	ug/L						U
1,2-Dichloropropane	ND	0.07	0.20	ug/L						U
Bromodichloromethane	ND	0.09	0.20	ug/L						U
Dibromomethane	ND	0.06	0.20	ug/L						U



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Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0522-BLK2)						Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 10:42					
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	1.90	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U
Toluene	ND	0.05	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U
2-Hexanone	ND	2.06	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.10	0.20	ug/L							U
1,3-Dichloropropane	ND	0.07	0.20	ug/L							U
Tetrachloroethene	ND	0.09	0.20	ug/L							U
Dibromochloromethane	ND	0.09	0.20	ug/L							U
1,2-Dibromoethane	ND	0.09	0.20	ug/L							U
Chlorobenzene	ND	0.06	0.20	ug/L							U
Ethylbenzene	ND	0.05	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.09	0.20	ug/L							U
m,p-Xylene	ND	0.14	0.40	ug/L							U
o-Xylene	ND	0.08	0.20	ug/L							U
Xylenes, total	ND	0.22	0.60	ug/L							U
Styrene	ND	0.09	0.20	ug/L							U
Bromoform	ND	0.15	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.10	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.16	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	0.60	1.00	ug/L							U
n-Propylbenzene	ND	0.07	0.20	ug/L							U
Bromobenzene	ND	0.07	0.20	ug/L							U
Isopropyl Benzene	ND	0.07	0.20	ug/L							U
2-Chlorotoluene	ND	0.06	0.20	ug/L							U
4-Chlorotoluene	ND	0.06	0.20	ug/L							U
t-Butylbenzene	ND	0.07	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.07	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.10	0.20	ug/L							U
s-Butylbenzene	ND	0.06	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.08	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.10	0.20	ug/L							U
n-Butylbenzene	ND	0.18	0.20	ug/L							U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0522-BLK2)						Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 10:42					
1,2-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.39	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.21	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	1.00	2.00	ug/L							U
Naphthalene	ND	0.27	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.25	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.13	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.14	0.50	ug/L							U
2-Pentanone	ND	2.34	5.00	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.93			ug/L	5.00		98.7	80-129			
<i>Surrogate: Toluene-d8</i>	4.93			ug/L	5.00		98.7	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.68			ug/L	5.00		93.7	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.10			ug/L	5.00		102	80-120			
LCS (BKH0522-BS1)						Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 08:58					
Gasoline Range Organics (Tol-Nap)	1090		100	ug/L	1000		109	72-128			
<i>Surrogate: Toluene-d8</i>	4.98			ug/L	5.00		99.6	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.95			ug/L	5.00		99.1	80-120			
LCS (BKH0522-BS2)						Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 09:19					
Chloromethane	8.79	0.27	0.50	ug/L	10.0		87.9	60-138			
Vinyl Chloride	10.1	0.08	0.20	ug/L	10.0		101	66-133			
Bromomethane	9.83	0.74	1.00	ug/L	10.0		98.3	72-131			
Chloroethane	9.27	0.18	0.20	ug/L	10.0		92.7	60-155			
Trichlorofluoromethane	9.69	0.13	0.20	ug/L	10.0		96.9	62-141			
Acrolein	44.9	2.70	5.00	ug/L	50.0		89.7	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.3	0.11	0.20	ug/L	10.0		103	76-129			
Acetone	47.5	4.33	5.00	ug/L	50.0		94.9	58-142			
1,1-Dichloroethene	10.1	0.08	0.20	ug/L	10.0		101	69-135			
Iodomethane	10.1	0.43	1.00	ug/L	10.0		101	56-147			
Methylene Chloride	9.26	0.53	1.00	ug/L	10.0		92.6	65-135			
Acrylonitrile	8.84	0.40	1.00	ug/L	10.0		88.4	64-134			
Carbon Disulfide	9.69	0.12	0.20	ug/L	10.0		96.9	78-125			
trans-1,2-Dichloroethene	9.57	0.07	0.20	ug/L	10.0		95.7	78-128			



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Project Manager: Zanna Satterwhite

Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0522-BS2)						Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 09:19					
Vinyl Acetate	9.98	0.12	0.20	ug/L	10.0		99.8	55-138			
1,1-Dichloroethane	9.55	0.09	0.20	ug/L	10.0		95.5	76-124			
2-Butanone	48.6	1.77	5.00	ug/L	50.0		97.2	61-140			
2,2-Dichloropropane	9.78	0.11	0.20	ug/L	10.0		97.8	66-147			
cis-1,2-Dichloroethene	9.37	0.08	0.20	ug/L	10.0		93.7	80-121			
Chloroform	9.73	0.05	0.20	ug/L	10.0		97.3	80-122			
Bromochloromethane	9.53	0.09	0.20	ug/L	10.0		95.3	80-121			
1,1,1-Trichloroethane	9.85	0.08	0.20	ug/L	10.0		98.5	79-123			
1,1-Dichloropropene	9.64	0.09	0.20	ug/L	10.0		96.4	80-127			
Carbon tetrachloride	9.88	0.09	0.20	ug/L	10.0		98.8	53-137			
1,2-Dichloroethane	9.79	0.08	0.20	ug/L	10.0		97.9	75-123			
Benzene	9.84	0.05	0.20	ug/L	10.0		98.4	80-120			
Trichloroethene	9.73	0.07	0.20	ug/L	10.0		97.3	80-120			
1,2-Dichloropropane	9.55	0.07	0.20	ug/L	10.0		95.5	80-120			
Bromodichloromethane	9.82	0.09	0.20	ug/L	10.0		98.2	80-121			
Dibromomethane	9.59	0.06	0.20	ug/L	10.0		95.9	80-120			
2-Chloroethyl vinyl ether	9.29	0.55	1.00	ug/L	10.0		92.9	64-120			
4-Methyl-2-Pentanone	48.6	1.90	5.00	ug/L	50.0		97.2	67-133			
cis-1,3-Dichloropropene	9.88	0.09	0.20	ug/L	10.0		98.8	80-124			
Toluene	9.95	0.05	0.20	ug/L	10.0		99.5	80-120			
trans-1,3-Dichloropropene	10.4	0.09	0.20	ug/L	10.0		104	71-127			
2-Hexanone	47.8	2.06	5.00	ug/L	50.0		95.6	69-133			
1,1,2-Trichloroethane	9.81	0.10	0.20	ug/L	10.0		98.1	80-121			
1,3-Dichloropropane	9.32	0.07	0.20	ug/L	10.0		93.2	80-120			
Tetrachloroethene	9.57	0.09	0.20	ug/L	10.0		95.7	80-120			
Dibromochloromethane	9.97	0.09	0.20	ug/L	10.0		99.7	65-135			
1,2-Dibromoethane	10.1	0.09	0.20	ug/L	10.0		101	80-121			
Chlorobenzene	9.70	0.06	0.20	ug/L	10.0		97.0	80-120			
Ethylbenzene	9.79	0.05	0.20	ug/L	10.0		97.9	80-120			
1,1,1,2-Tetrachloroethane	9.71	0.09	0.20	ug/L	10.0		97.1	80-120			
m,p-Xylene	20.4	0.14	0.40	ug/L	20.0		102	80-121			
o-Xylene	9.78	0.08	0.20	ug/L	10.0		97.8	80-121			
Xylenes, total	30.2	0.22	0.60	ug/L	30.0		101	76-127			
Styrene	10.3	0.09	0.20	ug/L	10.0		103	80-124			
Bromoform	9.93	0.15	0.20	ug/L	10.0		99.3	51-134			



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0522-BS2)						Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 09:19					
1,1,2,2-Tetrachloroethane	9.38	0.10	0.20	ug/L	10.0		93.8	77-123			
1,2,3-Trichloropropane	9.79	0.16	0.50	ug/L	10.0		97.9	76-125			
trans-1,4-Dichloro 2-Butene	9.68	0.60	1.00	ug/L	10.0		96.8	55-129			
n-Propylbenzene	9.63	0.07	0.20	ug/L	10.0		96.3	78-130			
Bromobenzene	9.74	0.07	0.20	ug/L	10.0		97.4	80-120			
Isopropyl Benzene	9.59	0.07	0.20	ug/L	10.0		95.9	80-128			
2-Chlorotoluene	9.69	0.06	0.20	ug/L	10.0		96.9	78-122			
4-Chlorotoluene	9.75	0.06	0.20	ug/L	10.0		97.5	80-121			
t-Butylbenzene	9.84	0.07	0.20	ug/L	10.0		98.4	78-125			
1,3,5-Trimethylbenzene	9.80	0.07	0.20	ug/L	10.0		98.0	80-129			
1,2,4-Trimethylbenzene	10.3	0.10	0.20	ug/L	10.0		103	80-127			
s-Butylbenzene	9.54	0.06	0.20	ug/L	10.0		95.4	78-129			
4-Isopropyl Toluene	10.2	0.08	0.20	ug/L	10.0		102	79-130			
1,3-Dichlorobenzene	9.90	0.08	0.20	ug/L	10.0		99.0	80-120			
1,4-Dichlorobenzene	9.80	0.10	0.20	ug/L	10.0		98.0	80-120			
n-Butylbenzene	10.1	0.18	0.20	ug/L	10.0		101	74-129			
1,2-Dichlorobenzene	9.73	0.08	0.20	ug/L	10.0		97.3	80-120			
1,2-Dibromo-3-chloropropane	9.26	0.39	0.50	ug/L	10.0		92.6	62-123			
1,2,4-Trichlorobenzene	9.69	0.21	0.50	ug/L	10.0		96.9	64-124			
Hexachloro-1,3-Butadiene	8.88	1.00	2.00	ug/L	10.0		88.8	58-123			
Naphthalene	9.82	0.27	0.50	ug/L	10.0		98.2	50-134			
1,2,3-Trichlorobenzene	9.51	0.25	0.50	ug/L	10.0		95.1	49-133			
Dichlorodifluoromethane	9.11	0.13	0.20	ug/L	10.0		91.1	48-147			
Methyl tert-butyl Ether	9.74	0.14	0.50	ug/L	10.0		97.4	71-132			
2-Pentanone	46.7	2.34	5.00	ug/L	50.0		93.4	69-134			
Surrogate: 1,2-Dichloroethane-d4	4.93			ug/L	5.00		98.5	80-129			
Surrogate: Toluene-d8	5.04			ug/L	5.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	4.97			ug/L	5.00		99.4	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.07			ug/L	5.00		101	80-120			
LCS Dup (BKH0522-BS2)						Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 09:40					
Gasoline Range Organics (Tol-Nap)	1070		100	ug/L	1000		107	72-128	2.21	30	
Surrogate: Toluene-d8	4.99			ug/L	5.00		99.8	80-120			
Surrogate: 4-Bromofluorobenzene	4.84			ug/L	5.00		96.9	80-120			



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Project Manager: Zanna Satterwhite

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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKH0522-BSD2)						Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 10:00					
Chloromethane	8.60	0.27	0.50	ug/L	10.0		86.0	60-138	2.17	30	
Vinyl Chloride	9.30	0.08	0.20	ug/L	10.0		93.0	66-133	8.22	30	
Bromomethane	9.33	0.74	1.00	ug/L	10.0		93.3	72-131	5.17	30	
Chloroethane	8.96	0.18	0.20	ug/L	10.0		89.6	60-155	3.35	30	
Trichlorofluoromethane	9.86	0.13	0.20	ug/L	10.0		98.6	62-141	1.76	30	
Acrolein	43.9	2.70	5.00	ug/L	50.0		87.8	52-190	2.22	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.58	0.11	0.20	ug/L	10.0		95.8	76-129	7.59	30	
Acetone	45.4	4.33	5.00	ug/L	50.0		90.9	58-142	4.39	30	
1,1-Dichloroethene	9.42	0.08	0.20	ug/L	10.0		94.2	69-135	6.85	30	
Iodomethane	9.57	0.43	1.00	ug/L	10.0		95.7	56-147	5.64	30	
Methylene Chloride	9.02	0.53	1.00	ug/L	10.0		90.2	65-135	2.61	30	
Acrylonitrile	9.34	0.40	1.00	ug/L	10.0		93.4	64-134	5.54	30	
Carbon Disulfide	9.10	0.12	0.20	ug/L	10.0		91.0	78-125	6.27	30	
trans-1,2-Dichloroethene	9.03	0.07	0.20	ug/L	10.0		90.3	78-128	5.82	30	
Vinyl Acetate	9.45	0.12	0.20	ug/L	10.0		94.5	55-138	5.51	30	
1,1-Dichloroethane	9.16	0.09	0.20	ug/L	10.0		91.6	76-124	4.16	30	
2-Butanone	48.3	1.77	5.00	ug/L	50.0		96.5	61-140	0.74	30	
2,2-Dichloropropane	9.29	0.11	0.20	ug/L	10.0		92.9	66-147	5.14	30	
cis-1,2-Dichloroethene	9.04	0.08	0.20	ug/L	10.0		90.4	80-121	3.54	30	
Chloroform	9.30	0.05	0.20	ug/L	10.0		93.0	80-122	4.48	30	
Bromochloromethane	9.31	0.09	0.20	ug/L	10.0		93.1	80-121	2.29	30	
1,1,1-Trichloroethane	9.42	0.08	0.20	ug/L	10.0		94.2	79-123	4.44	30	
1,1-Dichloropropene	9.07	0.09	0.20	ug/L	10.0		90.7	80-127	6.09	30	
Carbon tetrachloride	9.34	0.09	0.20	ug/L	10.0		93.4	53-137	5.54	30	
1,2-Dichloroethane	9.36	0.08	0.20	ug/L	10.0		93.6	75-123	4.44	30	
Benzene	9.35	0.05	0.20	ug/L	10.0		93.5	80-120	5.10	30	
Trichloroethene	9.35	0.07	0.20	ug/L	10.0		93.5	80-120	3.94	30	
1,2-Dichloropropane	9.15	0.07	0.20	ug/L	10.0		91.5	80-120	4.32	30	
Bromodichloromethane	9.43	0.09	0.20	ug/L	10.0		94.3	80-121	4.05	30	
Dibromomethane	9.48	0.06	0.20	ug/L	10.0		94.8	80-120	1.23	30	
2-Chloroethyl vinyl ether	8.99	0.55	1.00	ug/L	10.0		89.9	64-120	3.25	30	
4-Methyl-2-Pentanone	48.6	1.90	5.00	ug/L	50.0		97.3	67-133	0.13	30	
cis-1,3-Dichloropropene	9.57	0.09	0.20	ug/L	10.0		95.7	80-124	3.21	30	
Toluene	9.55	0.05	0.20	ug/L	10.0		95.5	80-120	4.07	30	
trans-1,3-Dichloropropene	10.1	0.09	0.20	ug/L	10.0		101	71-127	3.38	30	



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKH0522-BSD2)						Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 10:00					
2-Hexanone	48.5	2.06	5.00	ug/L	50.0		97.1	69-133	1.50	30	
1,1,2-Trichloroethane	9.38	0.10	0.20	ug/L	10.0		93.8	80-121	4.50	30	
1,3-Dichloropropane	9.41	0.07	0.20	ug/L	10.0		94.1	80-120	1.04	30	
Tetrachloroethene	9.50	0.09	0.20	ug/L	10.0		95.0	80-120	0.81	30	
Dibromochloromethane	9.66	0.09	0.20	ug/L	10.0		96.6	65-135	3.12	30	
1,2-Dibromoethane	9.58	0.09	0.20	ug/L	10.0		95.8	80-121	5.73	30	
Chlorobenzene	9.38	0.06	0.20	ug/L	10.0		93.8	80-120	3.37	30	
Ethylbenzene	9.56	0.05	0.20	ug/L	10.0		95.6	80-120	2.33	30	
1,1,1,2-Tetrachloroethane	9.55	0.09	0.20	ug/L	10.0		95.5	80-120	1.65	30	
m,p-Xylene	20.0	0.14	0.40	ug/L	20.0		100	80-121	2.01	30	
o-Xylene	9.60	0.08	0.20	ug/L	10.0		96.0	80-121	1.83	30	
Xylenes, total	29.6	0.22	0.60	ug/L	30.0		98.8	76-127	1.95	30	
Styrene	10.2	0.09	0.20	ug/L	10.0		102	80-124	1.07	30	
Bromoform	9.82	0.15	0.20	ug/L	10.0		98.2	51-134	1.12	30	
1,1,2,2-Tetrachloroethane	9.38	0.10	0.20	ug/L	10.0		93.8	77-123	0.03	30	
1,2,3-Trichloropropane	9.67	0.16	0.50	ug/L	10.0		96.7	76-125	1.19	30	
trans-1,4-Dichloro 2-Butene	9.46	0.60	1.00	ug/L	10.0		94.6	55-129	2.32	30	
n-Propylbenzene	9.45	0.07	0.20	ug/L	10.0		94.5	78-130	1.88	30	
Bromobenzene	9.57	0.07	0.20	ug/L	10.0		95.7	80-120	1.83	30	
Isopropyl Benzene	9.44	0.07	0.20	ug/L	10.0		94.4	80-128	1.59	30	
2-Chlorotoluene	9.40	0.06	0.20	ug/L	10.0		94.0	78-122	3.09	30	
4-Chlorotoluene	9.35	0.06	0.20	ug/L	10.0		93.5	80-121	4.20	30	
t-Butylbenzene	9.68	0.07	0.20	ug/L	10.0		96.8	78-125	1.64	30	
1,3,5-Trimethylbenzene	9.62	0.07	0.20	ug/L	10.0		96.2	80-129	1.87	30	
1,2,4-Trimethylbenzene	10.1	0.10	0.20	ug/L	10.0		101	80-127	1.95	30	
s-Butylbenzene	9.55	0.06	0.20	ug/L	10.0		95.5	78-129	0.07	30	
4-Isopropyl Toluene	9.99	0.08	0.20	ug/L	10.0		99.9	79-130	2.13	30	
1,3-Dichlorobenzene	9.60	0.08	0.20	ug/L	10.0		96.0	80-120	3.01	30	
1,4-Dichlorobenzene	9.46	0.10	0.20	ug/L	10.0		94.6	80-120	3.50	30	
n-Butylbenzene	9.95	0.18	0.20	ug/L	10.0		99.5	74-129	1.49	30	
1,2-Dichlorobenzene	9.48	0.08	0.20	ug/L	10.0		94.8	80-120	2.58	30	
1,2-Dibromo-3-chloropropane	9.07	0.39	0.50	ug/L	10.0		90.7	62-123	2.08	30	
1,2,4-Trichlorobenzene	9.78	0.21	0.50	ug/L	10.0		97.8	64-124	0.92	30	
Hexachloro-1,3-Butadiene	9.64	1.00	2.00	ug/L	10.0		96.4	58-123	8.26	30	
Naphthalene	9.83	0.27	0.50	ug/L	10.0		98.3	50-134	0.16	30	



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKH0522-BSD2)						Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 10:00					
1,2,3-Trichlorobenzene	9.41	0.25	0.50	ug/L	10.0		94.1	49-133	1.03	30	
Dichlorodifluoromethane	8.82	0.13	0.20	ug/L	10.0		88.2	48-147	3.33	30	
Methyl tert-butyl Ether	9.40	0.14	0.50	ug/L	10.0		94.0	71-132	3.50	30	
2-Pentanone	46.2	2.34	5.00	ug/L	50.0		92.4	69-134	1.13	30	
Surrogate: 1,2-Dichloroethane-d4	4.91			ug/L	5.00		98.1	80-129			
Surrogate: Toluene-d8	5.08			ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.91			ug/L	5.00		98.3	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.03			ug/L	5.00		101	80-120			

22H0338-02MS G (BKH0522-MS1)			Source: 22H0338-02			Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 19:02					
Gasoline Range Organics (Tol-Nap)	1020		100	ug/L	1000	ND	102	72-128			
Surrogate: Toluene-d8	4.95			ug/L	5.00	4.89	99.1	80-120			
Surrogate: 4-Bromofluorobenzene	4.86			ug/L	5.00	4.79	97.3	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

22H0338-02MS (BKH0522-MS2)			Source: 22H0338-02			Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 19:43					
Chloromethane	9.11	0.27	0.50	ug/L	10.0	ND	91.1	60-138			
Vinyl Chloride	9.81	0.08	0.20	ug/L	10.0	ND	98.1	66-133			
Bromomethane	9.91	0.74	1.00	ug/L	10.0	ND	99.1	72-131			
Chloroethane	9.97	0.18	0.20	ug/L	10.0	ND	99.7	60-155			
Trichlorofluoromethane	10.7	0.13	0.20	ug/L	10.0	ND	107	62-141			
Acrolein	49.1	2.70	5.00	ug/L	50.0	ND	98.3	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.4	0.11	0.20	ug/L	10.0	ND	104	76-129			
Acetone	52.6	4.33	5.00	ug/L	50.0	ND	105	58-142			
1,1-Dichloroethene	10.4	0.08	0.20	ug/L	10.0	ND	104	69-135			
Iodomethane	10.5	0.43	1.00	ug/L	10.0	ND	105	56-147			
Methylene Chloride	10.7	0.53	1.00	ug/L	10.0	ND	107	65-135			
Acrylonitrile	9.69	0.40	1.00	ug/L	10.0	ND	96.9	64-134			
Carbon Disulfide	10.0	0.12	0.20	ug/L	10.0	ND	100	78-125			
trans-1,2-Dichloroethene	10.0	0.07	0.20	ug/L	10.0	ND	100	78-128			
Vinyl Acetate	8.31	0.12	0.20	ug/L	10.0	ND	83.1	55-138			
1,1-Dichloroethane	9.92	0.09	0.20	ug/L	10.0	ND	99.2	76-124			
2-Butanone	50.8	1.77	5.00	ug/L	50.0	ND	102	61-140			
2,2-Dichloropropane	8.69	0.11	0.20	ug/L	10.0	ND	86.9	66-147			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
22H0338-02MS (BKH0522-MS2)		Source: 22H0338-02		Prepared: 22-Aug-2022		Analyzed: 22-Aug-2022 19:43					
cis-1,2-Dichloroethene	9.75	0.08	0.20	ug/L	10.0	ND	97.5	80-121			
Chloroform	10.2	0.05	0.20	ug/L	10.0	ND	102	80-122			
Bromochloromethane	10.1	0.09	0.20	ug/L	10.0	ND	101	80-121			
1,1,1-Trichloroethane	10.2	0.08	0.20	ug/L	10.0	ND	102	79-123			
1,1-Dichloropropene	9.77	0.09	0.20	ug/L	10.0	ND	97.7	80-127			
Carbon tetrachloride	9.92	0.09	0.20	ug/L	10.0	ND	99.2	53-137			
1,2-Dichloroethane	10.3	0.08	0.20	ug/L	10.0	ND	103	75-123			
Benzene	10.1	0.05	0.20	ug/L	10.0	ND	101	80-120			
Trichloroethene	9.91	0.07	0.20	ug/L	10.0	ND	99.1	80-120			
1,2-Dichloropropane	9.85	0.07	0.20	ug/L	10.0	ND	98.5	80-120			
Bromodichloromethane	10.0	0.09	0.20	ug/L	10.0	ND	100	80-121			
Dibromomethane	10.1	0.06	0.20	ug/L	10.0	ND	101	80-120			
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L	10.0	ND		64-120			*, U
4-Methyl-2-Pentanone	51.9	1.90	5.00	ug/L	50.0	ND	104	67-133			
cis-1,3-Dichloropropene	9.91	0.09	0.20	ug/L	10.0	ND	99.1	80-124			
Toluene	10.4	0.05	0.20	ug/L	10.0	0.12	103	80-120			
trans-1,3-Dichloropropene	10.3	0.09	0.20	ug/L	10.0	ND	103	71-127			
2-Hexanone	52.5	2.06	5.00	ug/L	50.0	ND	105	69-133			
1,1,2-Trichloroethane	10.1	0.10	0.20	ug/L	10.0	ND	101	80-121			
1,3-Dichloropropane	9.97	0.07	0.20	ug/L	10.0	ND	99.7	80-120			
Tetrachloroethene	10.1	0.09	0.20	ug/L	10.0	ND	101	80-120			
Dibromochloromethane	10.1	0.09	0.20	ug/L	10.0	ND	101	65-135			
1,2-Dibromoethane	10.6	0.09	0.20	ug/L	10.0	ND	106	80-121			
Chlorobenzene	10.3	0.06	0.20	ug/L	10.0	ND	103	80-120			
Ethylbenzene	10.2	0.05	0.20	ug/L	10.0	ND	102	80-120			
1,1,1,2-Tetrachloroethane	10.1	0.09	0.20	ug/L	10.0	ND	101	80-120			
m,p-Xylene	21.6	0.14	0.40	ug/L	20.0	ND	108	80-121			
o-Xylene	10.4	0.08	0.20	ug/L	10.0	ND	104	80-121			
Xylenes, total	32.0	0.22	0.60	ug/L	30.0	ND	107	76-127			
Styrene	11.0	0.09	0.20	ug/L	10.0	ND	110	80-124			
Bromoform	10.1	0.15	0.20	ug/L	10.0	ND	101	51-134			
1,1,2,2-Tetrachloroethane	10.2	0.10	0.20	ug/L	10.0	ND	102	77-123			
1,2,3-Trichloropropane	10.5	0.16	0.50	ug/L	10.0	ND	105	76-125			
trans-1,4-Dichloro 2-Butene	9.25	0.60	1.00	ug/L	10.0	ND	92.5	55-129			
n-Propylbenzene	10.2	0.07	0.20	ug/L	10.0	ND	102	78-130			



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
22H0338-02MS (BKH0522-MS2)		Source: 22H0338-02			Prepared: 22-Aug-2022		Analyzed: 22-Aug-2022 19:43				
Bromobenzene	10.3	0.07	0.20	ug/L	10.0	ND	103	80-120			
Isopropyl Benzene	10.1	0.07	0.20	ug/L	10.0	ND	101	80-128			
2-Chlorotoluene	10.3	0.06	0.20	ug/L	10.0	ND	103	78-122			
4-Chlorotoluene	10.3	0.06	0.20	ug/L	10.0	ND	103	80-121			
t-Butylbenzene	10.5	0.07	0.20	ug/L	10.0	ND	105	78-125			
1,3,5-Trimethylbenzene	10.5	0.07	0.20	ug/L	10.0	ND	105	80-129			
1,2,4-Trimethylbenzene	10.9	0.10	0.20	ug/L	10.0	ND	109	80-127			
s-Butylbenzene	10.3	0.06	0.20	ug/L	10.0	ND	103	78-129			
4-Isopropyl Toluene	10.9	0.08	0.20	ug/L	10.0	ND	109	79-130			
1,3-Dichlorobenzene	10.5	0.08	0.20	ug/L	10.0	ND	105	80-120			
1,4-Dichlorobenzene	10.3	0.10	0.20	ug/L	10.0	ND	103	80-120			
n-Butylbenzene	10.9	0.18	0.20	ug/L	10.0	ND	109	74-129			
1,2-Dichlorobenzene	10.4	0.08	0.20	ug/L	10.0	ND	104	80-120			
1,2-Dibromo-3-chloropropane	9.45	0.39	0.50	ug/L	10.0	ND	94.5	62-123			
1,2,4-Trichlorobenzene	10.3	0.21	0.50	ug/L	10.0	ND	103	64-124			
Hexachloro-1,3-Butadiene	10.1	1.00	2.00	ug/L	10.0	ND	101	58-123			
Naphthalene	10.5	0.27	0.50	ug/L	10.0	ND	105	50-134			
1,2,3-Trichlorobenzene	10.2	0.25	0.50	ug/L	10.0	ND	102	49-133			
Dichlorodifluoromethane	9.40	0.13	0.20	ug/L	10.0	ND	94.0	48-147			
Methyl tert-butyl Ether	10.4	0.14	0.50	ug/L	10.0	ND	104	71-132			
2-Pentanone	49.3	2.34	5.00	ug/L	50.0	ND	98.6	69-134			
Surrogate: 1,2-Dichloroethane-d4	5.04			ug/L	5.00	5.25	101	80-129			
Surrogate: Toluene-d8	4.95			ug/L	5.00	4.89	99.1	80-120			
Surrogate: 4-Bromofluorobenzene	4.93			ug/L	5.00	4.79	98.6	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.01			ug/L	5.00	5.12	100	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

22H0338-02MSD G (BKH0522-MSD1)		Source: 22H0338-02			Prepared: 22-Aug-2022		Analyzed: 22-Aug-2022 19:22				
Gasoline Range Organics (Tol-Nap)	1070		100	ug/L	1000	ND	107	72-128	4.93	30	
Surrogate: Toluene-d8	4.98			ug/L	5.00	4.89	99.6	80-120			
Surrogate: 4-Bromofluorobenzene	4.74			ug/L	5.00	4.79	94.9	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

22H0338-02MSD (BKH0522-MSD2)		Source: 22H0338-02			Prepared: 22-Aug-2022		Analyzed: 22-Aug-2022 20:03				
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
22H0338-02MSD (BKH0522-MSD2)		Source: 22H0338-02		Prepared: 22-Aug-2022		Analyzed: 22-Aug-2022 20:03					
Chloromethane	9.67	0.27	0.50	ug/L	10.0	ND	96.7	60-138	5.97	30	
Vinyl Chloride	10.1	0.08	0.20	ug/L	10.0	ND	101	66-133	2.62	30	
Bromomethane	10.3	0.74	1.00	ug/L	10.0	ND	103	72-131	3.36	30	
Chloroethane	10.3	0.18	0.20	ug/L	10.0	ND	103	60-155	3.51	30	
Trichlorofluoromethane	11.8	0.13	0.20	ug/L	10.0	ND	118	62-141	9.79	30	
Acrolein	51.0	2.70	5.00	ug/L	50.0	ND	102	52-190	3.68	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	11.1	0.11	0.20	ug/L	10.0	ND	111	76-129	6.42	30	
Acetone	53.0	4.33	5.00	ug/L	50.0	ND	106	58-142	0.80	30	
1,1-Dichloroethene	10.9	0.08	0.20	ug/L	10.0	ND	109	69-135	4.87	30	
Iodomethane	11.0	0.43	1.00	ug/L	10.0	ND	110	56-147	4.55	30	
Methylene Chloride	10.8	0.53	1.00	ug/L	10.0	ND	108	65-135	0.90	30	
Acrylonitrile	9.82	0.40	1.00	ug/L	10.0	ND	98.2	64-134	1.31	30	
Carbon Disulfide	10.7	0.12	0.20	ug/L	10.0	ND	107	78-125	6.20	30	
trans-1,2-Dichloroethene	10.6	0.07	0.20	ug/L	10.0	ND	106	78-128	5.12	30	
Vinyl Acetate	8.30	0.12	0.20	ug/L	10.0	ND	83.0	55-138	0.03	30	
1,1-Dichloroethane	10.6	0.09	0.20	ug/L	10.0	ND	106	76-124	6.35	30	
2-Butanone	52.2	1.77	5.00	ug/L	50.0	ND	104	61-140	2.75	30	
2,2-Dichloropropane	9.19	0.11	0.20	ug/L	10.0	ND	91.9	66-147	5.62	30	
cis-1,2-Dichloroethene	10.4	0.08	0.20	ug/L	10.0	ND	104	80-121	6.08	30	
Chloroform	10.7	0.05	0.20	ug/L	10.0	ND	107	80-122	5.50	30	
Bromochloromethane	10.4	0.09	0.20	ug/L	10.0	ND	104	80-121	2.92	30	
1,1,1-Trichloroethane	11.0	0.08	0.20	ug/L	10.0	ND	110	79-123	7.57	30	
1,1-Dichloropropene	10.6	0.09	0.20	ug/L	10.0	ND	106	80-127	8.34	30	
Carbon tetrachloride	10.6	0.09	0.20	ug/L	10.0	ND	106	53-137	6.94	30	
1,2-Dichloroethane	10.9	0.08	0.20	ug/L	10.0	ND	109	75-123	5.35	30	
Benzene	10.8	0.05	0.20	ug/L	10.0	ND	108	80-120	6.23	30	
Trichloroethene	10.6	0.07	0.20	ug/L	10.0	ND	106	80-120	7.16	30	
1,2-Dichloropropane	10.4	0.07	0.20	ug/L	10.0	ND	104	80-120	5.33	30	
Bromodichloromethane	10.7	0.09	0.20	ug/L	10.0	ND	107	80-121	6.42	30	
Dibromomethane	10.5	0.06	0.20	ug/L	10.0	ND	105	80-120	4.64	30	
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L	10.0	ND		64-120			*; U
4-Methyl-2-Pentanone	53.5	1.90	5.00	ug/L	50.0	ND	107	67-133	3.04	30	
cis-1,3-Dichloropropene	10.5	0.09	0.20	ug/L	10.0	ND	105	80-124	5.60	30	
Toluene	10.9	0.05	0.20	ug/L	10.0	0.12	107	80-120	4.46	30	
trans-1,3-Dichloropropene	10.8	0.09	0.20	ug/L	10.0	ND	108	71-127	4.53	30	



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
22H0338-02MSD (BKH0522-MSD2)											
Source: 22H0338-02			Prepared: 22-Aug-2022 Analyzed: 22-Aug-2022 20:03								
2-Hexanone	54.0	2.06	5.00	ug/L	50.0	ND	108	69-133	2.83	30	
1,1,2-Trichloroethane	10.5	0.10	0.20	ug/L	10.0	ND	105	80-121	3.60	30	
1,3-Dichloropropane	10.7	0.07	0.20	ug/L	10.0	ND	107	80-120	7.28	30	
Tetrachloroethene	10.8	0.09	0.20	ug/L	10.0	ND	108	80-120	6.81	30	
Dibromochloromethane	10.9	0.09	0.20	ug/L	10.0	ND	109	65-135	7.18	30	
1,2-Dibromoethane	10.8	0.09	0.20	ug/L	10.0	ND	108	80-121	1.39	30	
Chlorobenzene	10.8	0.06	0.20	ug/L	10.0	ND	108	80-120	5.60	30	
Ethylbenzene	10.9	0.05	0.20	ug/L	10.0	ND	109	80-120	7.22	30	
1,1,1,2-Tetrachloroethane	10.9	0.09	0.20	ug/L	10.0	ND	109	80-120	8.29	30	
m,p-Xylene	23.1	0.14	0.40	ug/L	20.0	ND	115	80-121	6.62	30	
o-Xylene	11.0	0.08	0.20	ug/L	10.0	ND	110	80-121	5.59	30	
Xylenes, total	34.1	0.22	0.60	ug/L	30.0	ND	114	76-127	6.28	30	
Styrene	11.7	0.09	0.20	ug/L	10.0	ND	117	80-124	6.72	30	
Bromoform	10.9	0.15	0.20	ug/L	10.0	ND	109	51-134	7.10	30	
1,1,2,2-Tetrachloroethane	10.7	0.10	0.20	ug/L	10.0	ND	107	77-123	4.88	30	
1,2,3-Trichloropropane	11.2	0.16	0.50	ug/L	10.0	ND	112	76-125	6.09	30	
trans-1,4-Dichloro 2-Butene	9.22	0.60	1.00	ug/L	10.0	ND	92.2	55-129	0.39	30	
n-Propylbenzene	10.9	0.07	0.20	ug/L	10.0	ND	109	78-130	6.53	30	
Bromobenzene	11.1	0.07	0.20	ug/L	10.0	ND	111	80-120	7.17	30	
Isopropyl Benzene	10.7	0.07	0.20	ug/L	10.0	ND	107	80-128	6.00	30	
2-Chlorotoluene	11.1	0.06	0.20	ug/L	10.0	ND	111	78-122	7.40	30	
4-Chlorotoluene	11.1	0.06	0.20	ug/L	10.0	ND	111	80-121	6.94	30	
t-Butylbenzene	11.4	0.07	0.20	ug/L	10.0	ND	114	78-125	7.93	30	
1,3,5-Trimethylbenzene	11.2	0.07	0.20	ug/L	10.0	ND	112	80-129	6.63	30	
1,2,4-Trimethylbenzene	11.7	0.10	0.20	ug/L	10.0	ND	117	80-127	6.75	30	
s-Butylbenzene	11.2	0.06	0.20	ug/L	10.0	ND	112	78-129	8.13	30	
4-Isopropyl Toluene	11.7	0.08	0.20	ug/L	10.0	ND	117	79-130	6.95	30	
1,3-Dichlorobenzene	11.0	0.08	0.20	ug/L	10.0	ND	110	80-120	4.32	30	
1,4-Dichlorobenzene	11.0	0.10	0.20	ug/L	10.0	ND	110	80-120	5.93	30	
n-Butylbenzene	11.6	0.18	0.20	ug/L	10.0	ND	116	74-129	6.17	30	
1,2-Dichlorobenzene	11.1	0.08	0.20	ug/L	10.0	ND	111	80-120	6.49	30	
1,2-Dibromo-3-chloropropane	9.91	0.39	0.50	ug/L	10.0	ND	99.1	62-123	4.70	30	
1,2,4-Trichlorobenzene	11.2	0.21	0.50	ug/L	10.0	ND	112	64-124	8.12	30	
Hexachloro-1,3-Butadiene	11.2	1.00	2.00	ug/L	10.0	ND	112	58-123	10.40	30	
Naphthalene	10.9	0.27	0.50	ug/L	10.0	ND	109	50-134	3.87	30	



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Volatile Organic Compounds - Quality Control

Batch BKH0522 - EPA 5030C (Purge and Trap)

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
22H0338-02MSD (BKH0522-MSD2)		Source: 22H0338-02			Prepared: 22-Aug-2022		Analyzed: 22-Aug-2022 20:03				
1,2,3-Trichlorobenzene	10.8	0.25	0.50	ug/L	10.0	ND	108	49-133	5.68	30	
Dichlorodifluoromethane	9.84	0.13	0.20	ug/L	10.0	ND	98.4	48-147	4.56	30	
Methyl tert-butyl Ether	11.0	0.14	0.50	ug/L	10.0	ND	110	71-132	6.03	30	
2-Pentanone	50.0	2.34	5.00	ug/L	50.0	ND	100	69-134	1.41	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.07			ug/L	5.00	5.25	101	80-129			
<i>Surrogate: Toluene-d8</i>	5.03			ug/L	5.00	4.89	101	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.06			ug/L	5.00	4.79	101	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.96			ug/L	5.00	5.12	99.1	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0586 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0586-BLK1)						Prepared: 25-Aug-2022 Analyzed: 30-Aug-2022 15:55					
Phenol	ND	0.01	0.2	ug/L							U
bis(2-chloroethyl) ether	ND	0.03	0.2	ug/L							U
2-Chlorophenol	ND	0.03	0.2	ug/L							U
1,3-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,4-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,2-Dichlorobenzene	ND	0.03	0.2	ug/L							U
Benzyl Alcohol	ND	0.02	0.2	ug/L							U
2,2'-Oxybis(1-chloropropane)	ND	0.03	0.2	ug/L							U
2-Methylphenol	ND	0.03	0.2	ug/L							U
Hexachloroethane	ND	0.04	0.2	ug/L							U
N-Nitroso-di-n-Propylamine	ND	0.04	0.2	ug/L							U
4-Methylphenol	ND	0.03	0.2	ug/L							U
Nitrobenzene	ND	0.03	0.2	ug/L							U
Isophorone	ND	0.03	0.2	ug/L							U
2-Nitrophenol	ND	0.04	1.0	ug/L							U
2,4-Dimethylphenol	ND	0.3	1.0	ug/L							U
Bis(2-Chloroethoxy)methane	ND	0.03	0.2	ug/L							U
2,4-Dichlorophenol	ND	0.1	1.0	ug/L							U
1,2,4-Trichlorobenzene	ND	0.03	0.2	ug/L							U
Naphthalene	ND	0.03	0.2	ug/L							U
Benzoic acid	ND	0.1	2.0	ug/L							U
4-Chloroaniline	ND	0.04	1.0	ug/L							U
Hexachlorobutadiene	ND	0.04	0.2	ug/L							U
4-Chloro-3-Methylphenol	ND	0.1	1.0	ug/L							U
2-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Hexachlorocyclopentadiene	ND	0.1	1.0	ug/L							U
2,4,6-Trichlorophenol	ND	0.2	1.0	ug/L							U
2,4,5-Trichlorophenol	ND	0.1	1.0	ug/L							U
2-Chloronaphthalene	ND	0.03	0.2	ug/L							U
2-Nitroaniline	ND	0.2	1.0	ug/L							U
Acenaphthylene	ND	0.02	0.2	ug/L							U
Dimethylphthalate	ND	0.04	0.2	ug/L							U
2,6-Dinitrotoluene	ND	0.2	1.0	ug/L							U
Acenaphthene	ND	0.03	0.2	ug/L							U
3-Nitroaniline	ND	0.2	1.0	ug/L							U



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0586 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0586-BLK1)					Prepared: 25-Aug-2022 Analyzed: 30-Aug-2022 15:55						
2,4-Dinitrophenol	ND	0.2	2.0	ug/L							U
Dibenzofuran	ND	0.02	0.2	ug/L							U
4-Nitrophenol	ND	0.06	1.0	ug/L							U
2,4-Dinitrotoluene	ND	0.1	1.0	ug/L							U
Fluorene	ND	0.02	0.2	ug/L							U
4-Chlorophenylphenyl ether	ND	0.02	0.2	ug/L							U
Diethyl phthalate	ND	0.06	0.2	ug/L							U
4-Nitroaniline	ND	0.2	1.0	ug/L							U
4,6-Dinitro-2-methylphenol	ND	0.4	2.0	ug/L							U
N-Nitrosodiphenylamine	ND	0.03	0.2	ug/L							U
4-Bromophenyl phenyl ether	ND	0.02	0.2	ug/L							U
Hexachlorobenzene	ND	0.04	0.2	ug/L							U
Pentachlorophenol	ND	0.1	1.0	ug/L							U
Phenanthrene	ND	0.02	0.2	ug/L							U
Anthracene	ND	0.03	0.2	ug/L							U
Carbazole	ND	0.04	0.2	ug/L							U
Di-n-Butylphthalate	ND	0.05	0.2	ug/L							U
Fluoranthene	ND	0.03	0.2	ug/L							U
Pyrene	ND	0.03	0.2	ug/L							U
Butylbenzylphthalate	ND	0.07	0.2	ug/L							U
Benzo(a)anthracene	ND	0.04	0.2	ug/L							U
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L							U
Chrysene	ND	0.04	0.2	ug/L							U
bis(2-Ethylhexyl)phthalate	ND	0.2	0.2	ug/L							U
Di-n-Octylphthalate	ND	0.05	0.2	ug/L							U
Benzo(a)fluoranthene, Total	ND	0.08	0.4	ug/L							U
Benzo(a)pyrene	ND	0.05	0.2	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.06	0.2	ug/L							U
Dibenzo(a,h)anthracene	ND	0.07	0.2	ug/L							U
Benzo(g,h,i)perylene	ND	0.04	0.2	ug/L							U
1-Methylnaphthalene	ND	0.03	0.2	ug/L							U
<i>Surrogate: 2-Fluorophenol</i>	4.35			ug/L	7.50	58.0	30-160				
<i>Surrogate: Phenol-d5</i>	3.10			ug/L	7.50	41.4	30-160				Q
<i>Surrogate: 2-Chlorophenol-d4</i>	6.49			ug/L	7.50	86.5	30-160				



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0586 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0586-BLK1)						Prepared: 25-Aug-2022 Analyzed: 30-Aug-2022 15:55					
Surrogate: 1,2-Dichlorobenzene-d4	2.06			ug/L	5.00	41.2		30-160			
Surrogate: Nitrobenzene-d5	4.85			ug/L	5.00	97.0		30-160			
Surrogate: 2-Fluorobiphenyl	2.90			ug/L	5.00	58.0		30-160			
Surrogate: 2,4,6-Tribromophenol	8.99			ug/L	7.50	120		30-160			
Surrogate: p-Terphenyl-d14	5.03			ug/L	5.00	101		30-160			
LCS (BKH0586-BS1)						Prepared: 25-Aug-2022 Analyzed: 30-Aug-2022 16:36					
Phenol	2.8	0.01	0.2	ug/L	5.00	55.5		30-160			Q
bis(2-chloroethyl) ether	5.9	0.03	0.2	ug/L	5.00	118		30-160			
2-Chlorophenol	5.3	0.03	0.2	ug/L	5.00	105		30-160			
1,3-Dichlorobenzene	2.5	0.03	0.2	ug/L	5.00	50.1		30-160			
1,4-Dichlorobenzene	3.2	0.03	0.2	ug/L	5.00	64.5		30-160			
1,2-Dichlorobenzene	2.8	0.03	0.2	ug/L	5.00	55.2		30-160			
Benzyl Alcohol	2.5	0.02	0.2	ug/L	5.00	50.5		30-160			
2,2'-Oxybis(1-chloropropane)	5.6	0.03	0.2	ug/L	5.00	111		30-160			
2-Methylphenol	4.6	0.03	0.2	ug/L	5.00	91.7		30-160			
Hexachloroethane	2.2	0.04	0.2	ug/L	5.00	43.2		30-160			
N-Nitroso-di-n-Propylamine	6.1	0.04	0.2	ug/L	5.00	122		30-160			Q
4-Methylphenol	4.5	0.03	0.2	ug/L	5.00	89.1		30-160			
Nitrobenzene	5.4	0.03	0.2	ug/L	5.00	109		30-160			
Isophorone	7.7	0.03	0.2	ug/L	5.00	154		30-160			
2-Nitrophenol	4.8	0.04	1.0	ug/L	5.00	96.7		30-160			
2,4-Dimethylphenol	14.3	0.3	1.0	ug/L	13.0	110		30-160			
Bis(2-Chloroethoxy)methane	5.6	0.03	0.2	ug/L	5.00	113		30-160			
2,4-Dichlorophenol	14.6	0.1	1.0	ug/L	13.0	112		30-160			
1,2,4-Trichlorobenzene	2.6	0.03	0.2	ug/L	5.00	52.3		30-160			
Naphthalene	3.5	0.03	0.2	ug/L	5.00	70.8		30-160			
Benzoic acid	13.1	0.1	2.0	ug/L	23.0	56.9		30-160			
4-Chloroaniline	2.7	0.04	1.0	ug/L	13.0	20.5		30-160			*
Hexachlorobutadiene	2.1	0.04	0.2	ug/L	5.00	42.9		30-160			
4-Chloro-3-Methylphenol	15.0	0.1	1.0	ug/L	13.0	116		30-160			
2-Methylnaphthalene	3.6	0.03	0.2	ug/L	5.00	71.6		30-160			
Hexachlorocyclopentadiene	4.4	0.1	1.0	ug/L	13.0	33.7		30-160			Q
2,4,6-Trichlorophenol	15.8	0.2	1.0	ug/L	13.0	121		30-160			
2,4,5-Trichlorophenol	14.0	0.1	1.0	ug/L	13.0	108		30-160			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0586 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0586-BS1)					Prepared: 25-Aug-2022 Analyzed: 30-Aug-2022 16:36						
2-Chloronaphthalene	3.8	0.03	0.2	ug/L	5.00		76.5	30-160			
2-Nitroaniline	20.8	0.2	1.0	ug/L	13.0		160	30-160			Q
Acenaphthylene	3.7	0.02	0.2	ug/L	5.00		74.6	30-160			
Dimethylphthalate	4.6	0.04	0.2	ug/L	5.00		92.1	30-160			
2,6-Dinitrotoluene	14.6	0.2	1.0	ug/L	13.0		113	30-160			
Acenaphthene	4.0	0.03	0.2	ug/L	5.00		80.7	30-160			
3-Nitroaniline	12.4	0.2	1.0	ug/L	13.0		95.6	30-160			
2,4-Dinitrophenol	29.8	0.2	2.0	ug/L	23.0		129	30-160			
Dibenzofuran	4.3	0.02	0.2	ug/L	5.00		85.9	30-160			
4-Nitrophenol	5.6	0.06	1.0	ug/L	13.0		43.2	30-160			Q
2,4-Dinitrotoluene	14.0	0.1	1.0	ug/L	13.0		108	30-160			
Fluorene	3.8	0.02	0.2	ug/L	5.00		76.6	30-160			
4-Chlorophenylphenyl ether	4.2	0.02	0.2	ug/L	5.00		83.3	30-160			
Diethyl phthalate	4.4	0.06	0.2	ug/L	5.00		88.0	30-160			
4-Nitroaniline	14.4	0.2	1.0	ug/L	13.0		111	30-160			
4,6-Dinitro-2-methylphenol	31.2	0.4	2.0	ug/L	23.0		136	30-160			
N-Nitrosodiphenylamine	4.2	0.03	0.2	ug/L	5.00		84.8	30-160			
4-Bromophenyl phenyl ether	2.7	0.02	0.2	ug/L	5.00		53.4	30-160			Q
Hexachlorobenzene	4.4	0.04	0.2	ug/L	5.00		87.3	30-160			
Pentachlorophenol	12.8	0.1	1.0	ug/L	13.0		98.7	30-160			Q
Phenanthrene	4.3	0.02	0.2	ug/L	5.00		85.4	30-160			
Anthracene	4.2	0.03	0.2	ug/L	5.00		83.2	30-160			
Carbazole	4.8	0.04	0.2	ug/L	5.00		95.7	30-160			
Di-n-Butylphthalate	4.2	0.05	0.2	ug/L	5.00		83.6	30-160			Q
Fluoranthene	4.3	0.03	0.2	ug/L	5.00		86.3	30-160			
Pyrene	3.6	0.03	0.2	ug/L	5.00		72.1	30-160			
Butylbenzylphthalate	4.4	0.07	0.2	ug/L	5.00		87.6	30-160			
Benzo(a)anthracene	4.2	0.04	0.2	ug/L	5.00		83.7	30-160			
3,3'-Dichlorobenzidine	9.2	0.3	1.0	ug/L	13.0		71.0	30-160			
Chrysene	3.8	0.04	0.2	ug/L	5.00		76.0	30-160			
bis(2-Ethylhexyl)phthalate	4.9	0.2	0.2	ug/L	5.00		97.7	30-160			
Di-n-Octylphthalate	4.6	0.05	0.2	ug/L	5.00		92.8	30-160			
Benzo(a)fluoranthene, Total	8.2	0.08	0.4	ug/L	10.0		82.1	30-160			
Benzo(a)pyrene	4.2	0.05	0.2	ug/L	5.00		83.9	30-160			
Indeno(1,2,3-cd)pyrene	4.2	0.06	0.2	ug/L	5.00		84.5	30-160			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0586 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0586-BS1)					Prepared: 25-Aug-2022 Analyzed: 30-Aug-2022 16:36						
Dibenzo(a,h)anthracene	4.1	0.07	0.2	ug/L	5.00		81.1	30-160			
Benzo(g,h,i)perylene	4.2	0.04	0.2	ug/L	5.00		84.4	30-160			
1-Methylnaphthalene	3.7	0.03	0.2	ug/L	5.00		73.4	30-160			
Surrogate: 2-Fluorophenol	5.19			ug/L	7.50		69.1	30-160			
Surrogate: Phenol-d5	3.87			ug/L	7.50		51.7	30-160			Q
Surrogate: 2-Chlorophenol-d4	6.79			ug/L	7.50		90.6	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	2.67			ug/L	5.00		53.5	30-160			
Surrogate: Nitrobenzene-d5	5.31			ug/L	5.00		106	30-160			
Surrogate: 2-Fluorobiphenyl	3.83			ug/L	5.00		76.6	30-160			
Surrogate: 2,4,6-Tribromophenol	8.88			ug/L	7.50		118	30-160			
Surrogate: p-Terphenyl-d14	4.86			ug/L	5.00		97.3	30-160			
Matrix Spike (BKH0586-MS1)					Source: 22H0338-02 Prepared: 25-Aug-2022 Analyzed: 30-Aug-2022 17:56						
Phenol	3.2	0.01	0.2	ug/L	5.00	ND	63.7	30-160			Q
bis(2-chloroethyl) ether	6.3	0.03	0.2	ug/L	5.00	ND	126	30-160			
2-Chlorophenol	5.7	0.03	0.2	ug/L	5.00	ND	114	30-160			
1,3-Dichlorobenzene	3.5	0.03	0.2	ug/L	5.00	ND	70.0	30-160			
1,4-Dichlorobenzene	4.4	0.03	0.2	ug/L	5.00	ND	88.7	30-160			
1,2-Dichlorobenzene	3.7	0.03	0.2	ug/L	5.00	ND	73.9	30-160			
Benzyl Alcohol	4.2	0.02	0.2	ug/L	5.00	ND	84.1	30-160			
2,2'-Oxybis(1-chloropropane)	6.1	0.03	0.2	ug/L	5.00	ND	123	30-160			
2-Methylphenol	5.5	0.03	0.2	ug/L	5.00	ND	111	30-160			
Hexachloroethane	3.3	0.04	0.2	ug/L	5.00	ND	65.0	30-160			
N-Nitroso-di-n-Propylamine	6.6	0.04	0.2	ug/L	5.00	ND	132	30-160			Q
4-Methylphenol	5.0	0.03	0.2	ug/L	5.00	ND	101	30-160			
Nitrobenzene	6.0	0.03	0.2	ug/L	5.00	ND	120	30-160			
Isophorone	8.5	0.03	0.2	ug/L	5.00	ND	170	30-160			*
2-Nitrophenol	5.4	0.04	1.0	ug/L	5.00	ND	108	30-160			
2,4-Dimethylphenol	15.9	0.3	1.0	ug/L	13.0	ND	122	30-160			
Bis(2-Chloroethoxy)methane	6.1	0.03	0.2	ug/L	5.00	ND	122	30-160			
2,4-Dichlorophenol	16.5	0.1	1.0	ug/L	13.0	ND	127	30-160			
1,2,4-Trichlorobenzene	3.5	0.03	0.2	ug/L	5.00	ND	70.4	30-160			
Naphthalene	4.3	0.03	0.2	ug/L	5.00	ND	86.8	30-160			
Benzoic acid	16.6	0.1	2.0	ug/L	23.0	ND	72.0	30-160			
4-Chloroaniline	2.6	0.04	1.0	ug/L	13.0	ND	20.3	30-160			*



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0586 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKH0586-MS1)											
Source: 22H0338-02				Prepared: 25-Aug-2022 Analyzed: 30-Aug-2022 17:56							
Hexachlorobutadiene	3.2	0.04	0.2	ug/L	5.00	ND	63.4	30-160			
4-Chloro-3-Methylphenol	16.8	0.1	1.0	ug/L	13.0	ND	129	30-160			
2-Methylnaphthalene	4.5	0.03	0.2	ug/L	5.00	ND	90.1	30-160			
Hexachlorocyclopentadiene	7.4	0.1	1.0	ug/L	13.0	ND	57.0	30-160			Q
2,4,6-Trichlorophenol	18.0	0.2	1.0	ug/L	13.0	ND	138	30-160			
2,4,5-Trichlorophenol	16.1	0.1	1.0	ug/L	13.0	ND	124	30-160			
2-Chloronaphthalene	4.7	0.03	0.2	ug/L	5.00	ND	94.7	30-160			
2-Nitroaniline	23.4	0.2	1.0	ug/L	13.0	ND	180	30-160			*, Q
Acenaphthylene	4.1	0.02	0.2	ug/L	5.00	ND	82.5	30-160			
Dimethylphthalate	5.0	0.04	0.2	ug/L	5.00	ND	101	30-160			
2,6-Dinitrotoluene	16.4	0.2	1.0	ug/L	13.0	ND	126	30-160			
Acenaphthene	4.8	0.03	0.2	ug/L	5.00	ND	96.8	30-160			
3-Nitroaniline	12.3	0.2	1.0	ug/L	13.0	ND	94.6	30-160			
2,4-Dinitrophenol	36.1	0.2	2.0	ug/L	23.0	ND	157	30-160			
Dibenzofuran	5.0	0.02	0.2	ug/L	5.00	ND	101	30-160			
4-Nitrophenol	6.8	0.06	1.0	ug/L	13.0	ND	52.6	30-160			Q
2,4-Dinitrotoluene	16.1	0.1	1.0	ug/L	13.0	ND	124	30-160			
Fluorene	4.4	0.02	0.2	ug/L	5.00	ND	87.2	30-160			
4-Chlorophenylphenyl ether	4.9	0.02	0.2	ug/L	5.00	ND	99.0	30-160			
Diethyl phthalate	4.9	0.06	0.2	ug/L	5.00	ND	97.7	30-160			
4-Nitroaniline	14.3	0.2	1.0	ug/L	13.0	ND	110	30-160			
4,6-Dinitro-2-methylphenol	36.9	0.4	2.0	ug/L	23.0	ND	161	30-160			*
N-Nitrosodiphenylamine	3.2	0.03	0.2	ug/L	5.00	ND	63.4	30-160			
4-Bromophenyl phenyl ether	3.4	0.02	0.2	ug/L	5.00	ND	67.5	30-160			Q
Hexachlorobenzene	5.7	0.04	0.2	ug/L	5.00	ND	113	30-160			
Pentachlorophenol	16.7	0.1	1.0	ug/L	13.0	ND	128	30-160			Q
Phenanthrene	5.0	0.02	0.2	ug/L	5.00	ND	99.3	30-160			
Anthracene	4.6	0.03	0.2	ug/L	5.00	ND	92.4	30-160			
Carbazole	5.4	0.04	0.2	ug/L	5.00	ND	108	30-160			
Di-n-Butylphthalate	4.8	0.05	0.2	ug/L	5.00	ND	95.5	30-160			Q
Fluoranthene	5.0	0.03	0.2	ug/L	5.00	ND	99.4	30-160			
Pyrene	3.6	0.03	0.2	ug/L	5.00	ND	72.1	30-160			
Butylbenzylphthalate	4.7	0.07	0.2	ug/L	5.00	ND	93.4	30-160			
Benzo(a)anthracene	4.6	0.04	0.2	ug/L	5.00	ND	92.4	30-160			
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L	13.0	ND		30-160			*, U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0586 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKH0586-MS1)											
			Source: 22H0338-02		Prepared: 25-Aug-2022		Analyzed: 30-Aug-2022 17:56				
Chrysene	4.3	0.04	0.2	ug/L	5.00	ND	86.4	30-160			
bis(2-Ethylhexyl)phthalate	5.6	0.2	0.2	ug/L	5.00	ND	112	30-160			
Di-n-Octylphthalate	5.2	0.05	0.2	ug/L	5.00	ND	103	30-160			
Benzo(a)anthracene, Total	8.9	0.08	0.4	ug/L	10.0	ND	89.1	30-160			
Benzo(a)pyrene	4.5	0.05	0.2	ug/L	5.00	ND	90.1	30-160			
Indeno(1,2,3-cd)pyrene	4.8	0.06	0.2	ug/L	5.00	ND	96.9	30-160			
Dibenzo(a,h)anthracene	4.6	0.07	0.2	ug/L	5.00	ND	92.5	30-160			
Benzo(g,h,i)perylene	5.0	0.04	0.2	ug/L	5.00	ND	101	30-160			
1-Methylnaphthalene	4.6	0.03	0.2	ug/L	5.00	ND	92.1	30-160			
Surrogate: 2-Fluorophenol	5.65			ug/L	7.50	5.00	75.4	30-160			
Surrogate: Phenol-d5	4.45			ug/L	7.50	3.64	59.4	30-160			Q
Surrogate: 2-Chlorophenol-d4	7.50			ug/L	7.50	7.02	100	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	3.53			ug/L	5.00	3.34	70.6	30-160			
Surrogate: Nitrobenzene-d5	5.85			ug/L	5.00	5.99	117	30-160			
Surrogate: 2-Fluorobiphenyl	4.58			ug/L	5.00	4.66	91.6	30-160			
Surrogate: 2,4,6-Tribromophenol	10.0			ug/L	7.50	11.0	134	30-160			
Surrogate: p-Terphenyl-d14	5.33			ug/L	5.00	5.75	107	30-160			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKH0586-MSD1)											
			Source: 22H0338-02		Prepared: 25-Aug-2022		Analyzed: 30-Aug-2022 18:36				
Phenol	2.9	0.01	0.2	ug/L	5.00	ND	57.2	30-160	10.80	30	Q
bis(2-chloroethyl) ether	5.8	0.03	0.2	ug/L	5.00	ND	116	30-160	8.05	30	
2-Chlorophenol	4.6	0.03	0.2	ug/L	5.00	ND	92.8	30-160	20.60	30	
1,3-Dichlorobenzene	2.8	0.03	0.2	ug/L	5.00	ND	56.9	30-160	20.60	30	
1,4-Dichlorobenzene	3.6	0.03	0.2	ug/L	5.00	ND	72.2	30-160	20.50	30	
1,2-Dichlorobenzene	3.0	0.03	0.2	ug/L	5.00	ND	60.6	30-160	19.70	30	
Benzyl Alcohol	3.8	0.02	0.2	ug/L	5.00	ND	76.1	30-160	9.91	30	
2,2'-Oxybis(1-chloropropane)	5.4	0.03	0.2	ug/L	5.00	ND	109	30-160	11.80	30	
2-Methylphenol	5.0	0.03	0.2	ug/L	5.00	ND	99.8	30-160	10.30	30	
Hexachloroethane	2.6	0.04	0.2	ug/L	5.00	ND	51.6	30-160	23.00	30	
N-Nitroso-di-n-Propylamine	6.3	0.04	0.2	ug/L	5.00	ND	126	30-160	4.82	30	Q
4-Methylphenol	4.5	0.03	0.2	ug/L	5.00	ND	89.6	30-160	11.60	30	
Nitrobenzene	5.6	0.03	0.2	ug/L	5.00	ND	112	30-160	7.11	30	
Isophorone	8.1	0.03	0.2	ug/L	5.00	ND	162	30-160	5.03	30	*



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Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0586 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKH0586-MSD1)											
Source: 22H0338-02				Prepared: 25-Aug-2022 Analyzed: 30-Aug-2022 18:36							
2-Nitrophenol	5.1	0.04	1.0	ug/L	5.00	ND	101	30-160	6.17	30	
2,4-Dimethylphenol	15.1	0.3	1.0	ug/L	13.0	ND	116	30-160	5.21	30	
Bis(2-Chloroethoxy)methane	5.8	0.03	0.2	ug/L	5.00	ND	116	30-160	5.49	30	
2,4-Dichlorophenol	15.6	0.1	1.0	ug/L	13.0	ND	120	30-160	5.15	30	
1,2,4-Trichlorobenzene	2.9	0.03	0.2	ug/L	5.00	ND	58.9	30-160	17.80	30	
Naphthalene	3.7	0.03	0.2	ug/L	5.00	ND	74.8	30-160	14.80	30	
Benzoic acid	14.2	0.1	2.0	ug/L	23.0	ND	61.5	30-160	15.70	30	
4-Chloroaniline	3.2	0.04	1.0	ug/L	13.0	ND	24.6	30-160	19.20	30	*
Hexachlorobutadiene	2.5	0.04	0.2	ug/L	5.00	ND	49.8	30-160	24.00	30	
4-Chloro-3-Methylphenol	16.1	0.1	1.0	ug/L	13.0	ND	124	30-160	4.36	30	
2-Methylnaphthalene	3.9	0.03	0.2	ug/L	5.00	ND	78.9	30-160	13.30	30	
Hexachlorocyclopentadiene	6.2	0.1	1.0	ug/L	13.0	ND	47.6	30-160	18.10	30	Q
2,4,6-Trichlorophenol	16.9	0.2	1.0	ug/L	13.0	ND	130	30-160	6.48	30	
2,4,5-Trichlorophenol	15.2	0.1	1.0	ug/L	13.0	ND	117	30-160	5.40	30	
2-Chloronaphthalene	4.1	0.03	0.2	ug/L	5.00	ND	82.6	30-160	13.60	30	
2-Nitroaniline	22.7	0.2	1.0	ug/L	13.0	ND	175	30-160	2.96	30	*, Q
Acenaphthylene	3.7	0.02	0.2	ug/L	5.00	ND	74.7	30-160	9.84	30	
Dimethylphthalate	4.9	0.04	0.2	ug/L	5.00	ND	97.4	30-160	3.56	30	
2,6-Dinitrotoluene	15.3	0.2	1.0	ug/L	13.0	ND	118	30-160	6.77	30	
Acenaphthene	4.4	0.03	0.2	ug/L	5.00	ND	87.4	30-160	10.20	30	
3-Nitroaniline	12.2	0.2	1.0	ug/L	13.0	ND	93.8	30-160	0.79	30	
2,4-Dinitrophenol	31.9	0.2	2.0	ug/L	23.0	ND	139	30-160	12.30	30	
Dibenzofuran	4.6	0.02	0.2	ug/L	5.00	ND	92.1	30-160	9.14	30	
4-Nitrophenol	6.4	0.06	1.0	ug/L	13.0	ND	49.4	30-160	6.26	30	Q
2,4-Dinitrotoluene	15.3	0.1	1.0	ug/L	13.0	ND	117	30-160	5.15	30	
Fluorene	4.0	0.02	0.2	ug/L	5.00	ND	80.4	30-160	8.07	30	
4-Chlorophenylphenyl ether	4.4	0.02	0.2	ug/L	5.00	ND	88.4	30-160	11.30	30	
Diethyl phthalate	5.2	0.06	0.2	ug/L	5.00	ND	104	30-160	6.28	30	
4-Nitroaniline	14.4	0.2	1.0	ug/L	13.0	ND	111	30-160	1.02	30	
4,6-Dinitro-2-methylphenol	33.1	0.4	2.0	ug/L	23.0	ND	144	30-160	11.00	30	
N-Nitrosodiphenylamine	3.2	0.03	0.2	ug/L	5.00	ND	63.8	30-160	0.64	30	
4-Bromophenyl phenyl ether	4.3	0.02	0.2	ug/L	5.00	ND	86.2	30-160	24.30	30	Q
Hexachlorobenzene	5.4	0.04	0.2	ug/L	5.00	ND	107	30-160	5.62	30	
Pentachlorophenol	15.3	0.1	1.0	ug/L	13.0	ND	118	30-160	8.55	30	Q
Phenanthrene	4.6	0.02	0.2	ug/L	5.00	ND	92.5	30-160	7.08	30	



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Project Manager: Zanna Satterwhite

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09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKH0586 - EPA 3510C SepF

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Detection Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKH0586-MSD1)											
Source: 22H0338-02			Prepared: 25-Aug-2022 Analyzed: 30-Aug-2022 18:36								
Anthracene	4.4	0.03	0.2	ug/L	5.00	ND	87.6	30-160	5.24	30	
Carbazole	5.4	0.04	0.2	ug/L	5.00	ND	107	30-160	0.70	30	
Di-n-Butylphthalate	4.7	0.05	0.2	ug/L	5.00	ND	93.1	30-160	2.57	30	Q
Fluoranthene	4.7	0.03	0.2	ug/L	5.00	ND	94.0	30-160	5.57	30	
Pyrene	5.2	0.03	0.2	ug/L	5.00	ND	105	30-160	37.20	30	*
Butylbenzylphthalate	4.6	0.07	0.2	ug/L	5.00	ND	91.9	30-160	1.70	30	
Benzo(a)anthracene	4.6	0.04	0.2	ug/L	5.00	ND	91.7	30-160	0.79	30	
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L	13.0	ND		30-160			*, U
Chrysene	4.2	0.04	0.2	ug/L	5.00	ND	84.6	30-160	2.07	30	
bis(2-Ethylhexyl)phthalate	5.5	0.2	0.2	ug/L	5.00	ND	110	30-160	1.31	30	
Di-n-Octylphthalate	5.0	0.05	0.2	ug/L	5.00	ND	101	30-160	2.19	30	
Benzo(a)fluoranthene, Total	8.6	0.08	0.4	ug/L	10.0	ND	86.3	30-160	3.20	30	
Benzo(a)pyrene	4.3	0.05	0.2	ug/L	5.00	ND	86.2	30-160	4.36	30	
Indeno(1,2,3-cd)pyrene	4.6	0.06	0.2	ug/L	5.00	ND	92.9	30-160	4.31	30	
Dibenzo(a,h)anthracene	4.4	0.07	0.2	ug/L	5.00	ND	88.8	30-160	4.18	30	
Benzo(g,h,i)perylene	4.9	0.04	0.2	ug/L	5.00	ND	97.9	30-160	2.73	30	
1-Methylnaphthalene	4.0	0.03	0.2	ug/L	5.00	ND	79.2	30-160	15.10	30	
<i>Surrogate: 2-Fluorophenol</i>	4.89			ug/L	7.50	5.00	65.2	30-160			
<i>Surrogate: Phenol-d5</i>	3.71			ug/L	7.50	3.64	49.5	30-160			Q
<i>Surrogate: 2-Chlorophenol-d4</i>	6.61			ug/L	7.50	7.02	88.1	30-160			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	2.76			ug/L	5.00	3.34	55.1	30-160			
<i>Surrogate: Nitrobenzene-d5</i>	5.33			ug/L	5.00	5.99	107	30-160			
<i>Surrogate: 2-Fluorobiphenyl</i>	3.92			ug/L	5.00	4.66	78.5	30-160			
<i>Surrogate: 2,4,6-Tribromophenol</i>	9.27			ug/L	7.50	11.0	124	30-160			
<i>Surrogate: p-Terphenyl-d14</i>	5.05			ug/L	5.00	5.75	101	30-160			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKH0587 - EPA 3510C SepF

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0587-BLK1)											
						Prepared: 25-Aug-2022 Analyzed: 08-Sep-2022 12:46					
Naphthalene	0.003	0.001	0.010	ug/L							J
2-Methylnaphthalene	ND	0.001	0.010	ug/L							U
1-Methylnaphthalene	ND	0.0009	0.010	ug/L							U
Acenaphthylene	ND	0.002	0.010	ug/L							U
Acenaphthene	ND	0.003	0.010	ug/L							U
Dibenzofuran	ND	0.002	0.010	ug/L							U
Fluorene	ND	0.002	0.010	ug/L							U
Phenanthrene	ND	0.001	0.010	ug/L							U
Anthracene	ND	0.001	0.010	ug/L							U
Carbazole	ND	0.001	0.010	ug/L							U
Fluoranthene	ND	0.002	0.010	ug/L							U
Pyrene	ND	0.001	0.010	ug/L							U
Benzo(a)anthracene	ND	0.0008	0.010	ug/L							U
Chrysene	ND	0.0009	0.010	ug/L							U
Benzo(b)fluoranthene	ND	0.0005	0.010	ug/L							U
Benzo(k)fluoranthene	ND	0.003	0.010	ug/L							U
Benzo(j)fluoranthene	ND	0.002	0.010	ug/L							U
Benzofluoranthenes, Total	ND	0.004	0.010	ug/L							U
Benzo(a)pyrene	ND	0.002	0.010	ug/L							U
Perylene	ND	0.006	0.010	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.001	0.010	ug/L							U
Dibenzo(a,h)anthracene	ND	0.001	0.010	ug/L							U
Benzo(g,h,i)perylene	ND	0.001	0.010	ug/L							U
Surrogate: 2-Methylnaphthalene-d10	0.194			ug/L	0.300		64.6	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.270			ug/L	0.300		89.9	29-120			
Surrogate: Fluoranthene-d10	0.242			ug/L	0.300		80.5	57-120			

LCS (BKH0587-BS1)											
						Prepared: 25-Aug-2022 Analyzed: 08-Sep-2022 13:18					
Naphthalene	0.207	0.001	0.010	ug/L	0.300		68.9	37-120			
2-Methylnaphthalene	0.203	0.001	0.010	ug/L	0.300		67.7	37-120			
1-Methylnaphthalene	0.203	0.0009	0.010	ug/L	0.300		67.5	29-120			
Acenaphthylene	0.214	0.002	0.010	ug/L	0.300		71.4	41-120			
Acenaphthene	0.209	0.003	0.010	ug/L	0.300		69.7	41-120			
Dibenzofuran	0.212	0.002	0.010	ug/L	0.300		70.6	38-120			
Fluorene	0.222	0.002	0.010	ug/L	0.300		74.0	43-120			



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Semivolatile Organic Compounds - SIM - Quality Control

Batch BKH0587 - EPA 3510C SepF

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0587-BS1)					Prepared: 25-Aug-2022 Analyzed: 08-Sep-2022 13:18						
Phenanthrene	0.213	0.001	0.010	ug/L	0.300		71.1	41-120			
Anthracene	0.232	0.001	0.010	ug/L	0.300		77.2	40-120			
Carbazole	0.239	0.001	0.010	ug/L	0.300		79.7	30-160			
Fluoranthene	0.221	0.002	0.010	ug/L	0.300		73.6	45-120			
Pyrene	0.217	0.001	0.010	ug/L	0.300		72.5	41-120			
Benzo(a)anthracene	0.217	0.0008	0.010	ug/L	0.300		72.3	42-120			
Chrysene	0.216	0.0009	0.010	ug/L	0.300		72.0	44-120			
Benzo(b)fluoranthene	0.209	0.0005	0.010	ug/L	0.300		69.6	44-120			
Benzo(k)fluoranthene	0.236	0.003	0.010	ug/L	0.300		78.6	50-120			
Benzo(j)fluoranthene	0.225	0.002	0.010	ug/L	0.300		75.1	39-160			
Benzofluoranthenes, Total	0.670	0.004	0.010	ug/L	0.900		74.4	46-120			
Benzo(a)pyrene	0.215	0.002	0.010	ug/L	0.300		71.6	35-120			
Perylene	0.225	0.006	0.010	ug/L	0.300		75.1	30-160			
Indeno(1,2,3-cd)pyrene	0.256	0.001	0.010	ug/L	0.300		85.2	37-120			
Dibenzo(a,h)anthracene	0.261	0.001	0.010	ug/L	0.300		87.0	34-120			
Benzo(g,h,i)perylene	0.253	0.001	0.010	ug/L	0.300		84.3	38-120			
Surrogate: 2-Methylnaphthalene-d10	0.208			ug/L	0.300		69.3	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.284			ug/L	0.300		94.7	29-120			
Surrogate: Fluoranthene-d10	0.242			ug/L	0.300		80.6	57-120			
Matrix Spike (BKH0587-MS1)					Source: 22H0338-02 Prepared: 25-Aug-2022 Analyzed: 08-Sep-2022 14:22						
Naphthalene	0.206	0.001	0.010	ug/L	0.300	0.006	66.7	37-120			
2-Methylnaphthalene	0.204	0.001	0.010	ug/L	0.300	0.002	67.4	37-120			
1-Methylnaphthalene	0.200	0.0009	0.010	ug/L	0.300	0.001	66.3	29-120			
Acenaphthylene	0.212	0.002	0.010	ug/L	0.300	ND	70.6	41-120			
Acenaphthene	0.208	0.003	0.010	ug/L	0.300	ND	69.4	41-120			
Dibenzofuran	0.211	0.002	0.010	ug/L	0.300	ND	70.5	38-120			
Fluorene	0.223	0.002	0.010	ug/L	0.300	ND	74.4	43-120			
Phenanthrene	0.216	0.001	0.010	ug/L	0.300	ND	72.0	41-120			
Anthracene	0.235	0.001	0.010	ug/L	0.300	ND	78.3	40-120			
Carbazole	0.242	0.001	0.010	ug/L	0.300	ND	80.8	30-160			
Fluoranthene	0.221	0.002	0.010	ug/L	0.300	ND	73.7	45-120			
Pyrene	0.218	0.001	0.010	ug/L	0.300	ND	72.8	41-120			
Benzo(a)anthracene	0.224	0.0008	0.010	ug/L	0.300	0.001	74.1	42-120			
Chrysene	0.220	0.0009	0.010	ug/L	0.300	0.002	72.7	44-120			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKH0587 - EPA 3510C SepF

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKH0587-MS1)											
		Source: 22H0338-02			Prepared: 25-Aug-2022		Analyzed: 08-Sep-2022 14:22				
Benzo(b)fluoranthene	0.212	0.0005	0.010	ug/L	0.300	0.001	70.4	44-120			
Benzo(k)fluoranthene	0.243	0.003	0.010	ug/L	0.300	ND	80.8	50-120			
Benzo(j)fluoranthene	0.234	0.002	0.010	ug/L	0.300	ND	77.9	39-160			
Benzofluoranthenes, Total	0.689	0.004	0.010	ug/L	0.900	ND	76.5	46-120			
Benzo(a)pyrene	0.221	0.002	0.010	ug/L	0.300	ND	73.6	35-120			
Perylene	0.235	0.006	0.010	ug/L	0.300	ND	78.5	30-160			
Indeno(1,2,3-cd)pyrene	0.253	0.001	0.010	ug/L	0.300	0.001	83.9	37-120			
Dibenzo(a,h)anthracene	0.259	0.001	0.010	ug/L	0.300	0.002	85.7	34-120			
Benzo(g,h,i)perylene	0.252	0.001	0.010	ug/L	0.300	0.002	83.5	38-120			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.210			ug/L	0.300	0.200	69.9	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.286			ug/L	0.300	0.285	95.4	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.248			ug/L	0.300	0.246	82.8	57-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKH0587-MSD1)											
		Source: 22H0338-02			Prepared: 25-Aug-2022		Analyzed: 08-Sep-2022 14:54				
Naphthalene	0.203	0.001	0.010	ug/L	0.300	0.006	65.8	37-120	1.30	30	
2-Methylnaphthalene	0.202	0.001	0.010	ug/L	0.300	0.002	66.5	37-120	1.29	30	
1-Methylnaphthalene	0.199	0.0009	0.010	ug/L	0.300	0.001	66.1	29-120	0.40	30	
Acenaphthylene	0.213	0.002	0.010	ug/L	0.300	ND	71.0	41-120	0.58	30	
Acenaphthene	0.210	0.003	0.010	ug/L	0.300	ND	69.8	41-120	0.70	30	
Dibenzofuran	0.215	0.002	0.010	ug/L	0.300	ND	71.8	38-120	1.87	30	
Fluorene	0.227	0.002	0.010	ug/L	0.300	ND	75.6	43-120	1.55	30	
Phenanthrene	0.221	0.001	0.010	ug/L	0.300	ND	73.7	41-120	2.24	30	
Anthracene	0.239	0.001	0.010	ug/L	0.300	ND	79.6	40-120	1.61	30	
Carbazole	0.244	0.001	0.010	ug/L	0.300	ND	81.3	30-160	0.65	30	
Fluoranthene	0.225	0.002	0.010	ug/L	0.300	ND	75.1	45-120	1.95	30	
Pyrene	0.223	0.001	0.010	ug/L	0.300	ND	74.3	41-120	2.04	30	
Benzo(a)anthracene	0.221	0.0008	0.010	ug/L	0.300	0.001	73.2	42-120	1.29	30	
Chrysene	0.219	0.0009	0.010	ug/L	0.300	0.002	72.5	44-120	0.35	30	
Benzo(b)fluoranthene	0.212	0.0005	0.010	ug/L	0.300	0.001	70.3	44-120	0.15	30	
Benzo(k)fluoranthene	0.244	0.003	0.010	ug/L	0.300	ND	81.2	50-120	0.45	30	
Benzo(j)fluoranthene	0.234	0.002	0.010	ug/L	0.300	ND	77.9	39-160	0.06	30	
Benzofluoranthenes, Total	0.689	0.004	0.010	ug/L	0.900	ND	76.6	46-120	0.09	30	
Benzo(a)pyrene	0.221	0.002	0.010	ug/L	0.300	ND	73.7	35-120	0.21	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKH0587 - EPA 3510C SepF

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Detection Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKH0587-MSD1)											
			Source: 22H0338-02			Prepared: 25-Aug-2022			Analyzed: 08-Sep-2022 14:54		
Perylene	0.236	0.006	0.010	ug/L	0.300	ND	78.6	30-160	0.19	30	
Indeno(1,2,3-cd)pyrene	0.254	0.001	0.010	ug/L	0.300	0.001	84.1	37-120	0.25	30	
Dibenzo(a,h)anthracene	0.260	0.001	0.010	ug/L	0.300	0.002	86.1	34-120	0.42	30	
Benzo(g,h,i)perylene	0.256	0.001	0.010	ug/L	0.300	0.002	84.9	38-120	1.67	30	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.206			ug/L	0.300	0.200	68.5	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.281			ug/L	0.300	0.285	93.7	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.248			ug/L	0.300	0.246	82.7	57-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC.
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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BKH0588 - EPA 3510C SepF

Instrument: FID3 Analyst: JGR/AA

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0588-BLK1)		Prepared: 25-Aug-2022 Analyzed: 01-Sep-2022 20:57								
Diesel Range Organics (C12-C24)	ND	0.100	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L							U
<i>Surrogate: o-Terphenyl</i>	0.243		mg/L	0.225	108		50-150			
LCS (BKH0588-BS1)		Prepared: 25-Aug-2022 Analyzed: 01-Sep-2022 21:18								
Diesel Range Organics (C12-C24)	2.54	0.100	mg/L	3.00		84.8	56-120			
<i>Surrogate: o-Terphenyl</i>	0.231		mg/L	0.225	103		50-150			
Matrix Spike (BKH0588-MS1)		Source: 22H0338-02		Prepared: 25-Aug-2022 Analyzed: 01-Sep-2022 22:01						
Diesel Range Organics (C12-C24)	2.70	0.100	mg/L	3.00	ND	88.4	56-120			
<i>Surrogate: o-Terphenyl</i>	0.232		mg/L	0.225	0.246	103	50-150			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BKH0588-MSD1)		Source: 22H0338-02		Prepared: 25-Aug-2022 Analyzed: 01-Sep-2022 22:22						
Diesel Range Organics (C12-C24)	2.83	0.100	mg/L	3.00	ND	92.9	56-120	4.90	30	
<i>Surrogate: o-Terphenyl</i>	0.244		mg/L	0.225	0.246	108	50-150			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BKH0585 - EPA 3510C SepF

Instrument: ECD7 Analyst: JGR

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0585-BLK1)						Prepared: 25-Aug-2022 Analyzed: 28-Aug-2022 07:43					
Aroclor 1016	ND	0.002	0.010	ug/L							U
Aroclor 1221	ND	0.002	0.010	ug/L							U
Aroclor 1232	ND	0.002	0.010	ug/L							U
Aroclor 1242	ND	0.002	0.010	ug/L							U
Aroclor 1248	ND	0.002	0.010	ug/L							U
Aroclor 1254	ND	0.002	0.010	ug/L							U
Aroclor 1260	ND	0.003	0.010	ug/L							U
Aroclor 1262	ND	0.003	0.010	ug/L							U
Aroclor 1268	ND	0.003	0.010	ug/L							U
Surrogate: Decachlorobiphenyl	0.0153			ug/L	0.0200		76.5	29-120			
Surrogate: Tetrachlorometaxylene	0.0136			ug/L	0.0200		68.1	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0165			ug/L	0.0200		82.3	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0128			ug/L	0.0200		64.2	32-120			
LCS (BKH0585-BS1)						Prepared: 25-Aug-2022 Analyzed: 28-Aug-2022 08:04					
Aroclor 1016	0.037	0.002	0.010	ug/L	0.0500		73.5	54-120			
Aroclor 1260 [2C]	0.043	0.003	0.010	ug/L	0.0500		86.6	51-128			
Surrogate: Decachlorobiphenyl	0.0146			ug/L	0.0200		72.8	29-120			
Surrogate: Tetrachlorometaxylene	0.0141			ug/L	0.0200		70.6	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0167			ug/L	0.0200		83.4	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0129			ug/L	0.0200		64.7	32-120			
Matrix Spike (BKH0585-MS1)						Source: 22H0338-02 Prepared: 25-Aug-2022 Analyzed: 28-Aug-2022 08:47					
Aroclor 1016	0.037	0.002	0.010	ug/L	0.0500	ND	74.0	54-120			
Aroclor 1260	0.038	0.003	0.010	ug/L	0.0500	ND	75.2	51-128			
Surrogate: Decachlorobiphenyl	0.0160			ug/L	0.0200		80.2	29-120			
Surrogate: Tetrachlorometaxylene	0.0138			ug/L	0.0200		68.8	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0171			ug/L	0.0200		85.4	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0130			ug/L	0.0200		64.8	32-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BKH0585-MSD1)						Source: 22H0338-02 Prepared: 25-Aug-2022 Analyzed: 28-Aug-2022 09:08					
Aroclor 1016	0.037	0.002	0.010	ug/L	0.0500	ND	74.0	54-120	0.70	30	
Aroclor 1260	0.038	0.003	0.010	ug/L	0.0500	ND	75.9	51-128	0.95	30	



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BKH0585 - EPA 3510C SepF

Instrument: ECD7 Analyst: JGR

QC Sample/Analyte	Detection Result	Reporting Limit	Units	Spike Level	Source Result	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKH0585-MSD1)		Source: 22H0338-02		Prepared: 25-Aug-2022		Analyzed: 28-Aug-2022 09:08			
Surrogate: Decachlorobiphenyl	0.0162		ug/L	0.0200	80.9	29-120			
Surrogate: Tetrachlorometaxylene	0.0134		ug/L	0.0200	67.0	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0177		ug/L	0.0200	88.3	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0127		ug/L	0.0200	63.3	32-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKH0730 - TWM EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0730-BLK1)						Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 11:47					
Mercury	ND	0.000013	0.000100	mg/L							U
LCS (BKH0730-BS1)						Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 11:49					
Mercury	0.00211	0.000013	0.000100	mg/L	0.00200		105	80-120			
Duplicate (BKH0730-DUP1)						Source: 22H0338-02 Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 11:54					
Mercury	ND	0.000013	0.000100	mg/L		ND					U
Matrix Spike (BKH0730-MS1)						Source: 22H0338-02 Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 11:56					
Mercury	0.000975	0.000013	0.000100	mg/L	0.00100	ND	97.5	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BKH0730-MSD1)						Source: 22H0338-02 Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 11:58					
Mercury	0.00108	0.000013	0.000100	mg/L	0.00100	ND	108	75-125	10.50	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKH0759 - REN - EPA 3010A M

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0759-BLK1)						Prepared: 30-Aug-2022 Analyzed: 30-Aug-2022 19:48						
Antimony	121	ND	0.101	0.200	ug/L							U
Antimony	123	ND	0.102	0.200	ug/L							U
Beryllium	9	ND	0.0171	0.200	ug/L							U
Chromium	52	ND	0.260	0.500	ug/L							U
Chromium	53	ND	0.239	0.500	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Silver	107	ND	0.0220	0.200	ug/L							U
Thallium	205	ND	0.0234	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
Cadmium	111	ND	0.0300	0.100	ug/L							U
Cadmium	114	ND	0.0400	0.100	ug/L							U
Copper	63	ND	0.173	0.500	ug/L							U
Copper	65	ND	0.350	0.500	ug/L							U
Nickel	60	ND	0.0792	0.500	ug/L							U
Nickel	62	ND	0.220	0.500	ug/L							U
Selenium	78	ND	0.179	0.500	ug/L							U
Zinc	66	ND	2.92	6.00	ug/L							U
Zinc	67	ND	0.940	6.00	ug/L							U

LCS (BKH0759-BS1)						Prepared: 30-Aug-2022 Analyzed: 30-Aug-2022 19:53						
Antimony	121	24.5	0.101	0.200	ug/L	25.0		97.8	80-120			
Antimony	123	24.8	0.102	0.200	ug/L	25.0		99.0	80-120			
Beryllium	9	23.4	0.0171	0.200	ug/L	25.0		93.4	80-120			
Chromium	52	25.1	0.260	0.500	ug/L	25.0		101	80-120			
Chromium	53	25.1	0.239	0.500	ug/L	25.0		101	80-120			
Lead	208	26.8	0.0513	0.100	ug/L	25.0		107	80-120			
Silver	107	26.9	0.0220	0.200	ug/L	25.0		108	80-120			
Thallium	205	26.7	0.0234	0.200	ug/L	25.0		107	80-120			
Arsenic	75a	24.6	0.0373	0.200	ug/L	25.0		98.5	80-120			
Cadmium	111	25.8	0.0300	0.100	ug/L	25.0		103	80-120			
Cadmium	114	25.7	0.0400	0.100	ug/L	25.0		103	80-120			
Copper	63	26.5	0.173	0.500	ug/L	25.0		106	80-120			
Copper	65	26.4	0.350	0.500	ug/L	25.0		106	80-120			
Nickel	60	25.8	0.0792	0.500	ug/L	25.0		103	80-120			
Nickel	62	25.3	0.220	0.500	ug/L	25.0		101	80-120			



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKH0759 - REN - EPA 3010A M

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0759-BS1)						Prepared: 30-Aug-2022 Analyzed: 30-Aug-2022 19:53						
Selenium	78	80.0	0.179	0.500	ug/L	80.0		100	80-120			
Zinc	66	84.5	2.92	6.00	ug/L	80.0		106	80-120			
Zinc	67	79.0	0.940	6.00	ug/L	80.0		98.7	80-120			

Duplicate (BKH0759-DUP1)						Source: 22H0338-02 Prepared: 30-Aug-2022 Analyzed: 31-Aug-2022 05:56						
Antimony	121	ND	0.101	0.200	ug/L	ND						U
Lead	208	0.0690	0.0513	0.100	ug/L	0.0620				10.70	20	J
Silver	107	ND	0.0220	0.200	ug/L	ND						U
Thallium	205	ND	0.0234	0.200	ug/L	ND						U
Arsenic	75a	0.448	0.0373	0.200	ug/L	0.454				1.33	20	
Cadmium	111	ND	0.0300	0.100	ug/L	ND						U
Copper	63	0.441	0.173	0.500	ug/L	0.423				4.17	20	J
Nickel	60	0.238	0.0792	0.500	ug/L	0.242				1.67	20	J
Selenium	78	ND	0.179	0.500	ug/L	0.248						U
Zinc	66	ND	2.92	6.00	ug/L	ND						U

Matrix Spike (BKH0759-MS1)						Source: 22H0338-02 Prepared: 30-Aug-2022 Analyzed: 31-Aug-2022 06:00						
Antimony	121	24.1	0.101	0.200	ug/L	25.0	ND	96.5	75-125			
Lead	208	24.6	0.0513	0.100	ug/L	25.0	0.0620	98.0	75-125			
Silver	107	25.2	0.0220	0.200	ug/L	25.0	ND	101	75-125			
Thallium	205	23.8	0.0234	0.200	ug/L	25.0	ND	95.3	75-125			
Arsenic	75a	24.2	0.0373	0.200	ug/L	25.0	0.454	95.0	75-125			
Cadmium	111	24.6	0.0300	0.100	ug/L	25.0	ND	98.3	75-125			
Copper	63	26.3	0.173	0.500	ug/L	25.0	0.423	103	75-125			
Nickel	60	26.0	0.0792	0.500	ug/L	25.0	0.242	103	75-125			
Selenium	78	70.0	0.179	0.500	ug/L	80.0	0.248	87.2	75-125			
Zinc	66	76.0	2.92	6.00	ug/L	80.0	ND	95.0	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKH0759-MSD1)						Source: 22H0338-02 Prepared: 30-Aug-2022 Analyzed: 31-Aug-2022 06:04						
Antimony	121	24.3	0.101	0.200	ug/L	25.0	ND	97.2	75-125	0.73	20	
Lead	208	25.2	0.0513	0.100	ug/L	25.0	0.0620	100	75-125	2.40	20	
Silver	107	25.3	0.0220	0.200	ug/L	25.0	ND	101	75-125	0.34	20	
Thallium	205	24.6	0.0234	0.200	ug/L	25.0	ND	98.4	75-125	3.19	20	
Arsenic	75a	24.4	0.0373	0.200	ug/L	25.0	0.454	95.6	75-125	0.63	20	



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
09-Sep-2022 15:20

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKH0759 - REN - EPA 3010A M

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKH0759-MSD1)		Source: 22H0338-02			Prepared: 30-Aug-2022		Analyzed: 31-Aug-2022 06:04					
Cadmium	111	24.9	0.0300	0.100	ug/L	25.0	ND	99.6	75-125	1.25	20	
Copper	63	26.4	0.173	0.500	ug/L	25.0	0.423	104	75-125	0.53	20	
Nickel	60	26.3	0.0792	0.500	ug/L	25.0	0.242	104	75-125	0.88	20	
Selenium	78	70.4	0.179	0.500	ug/L	80.0	0.248	87.7	75-125	0.52	20	
Zinc	66	77.7	2.92	6.00	ug/L	80.0	ND	97.1	75-125	2.18	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BKH0759-DUP2)		Source: 22H0338-02			Prepared: 30-Aug-2022		Analyzed: 31-Aug-2022 23:33					
Beryllium	9	0.0620	0.0342	0.400	ug/L		0.0520		75-125	17.50	20	J, D
Chromium	52	2.33	0.520	1.00	ug/L		2.31		75-125	0.95	20	D
Matrix Spike (BKH0759-MS2)		Source: 22H0338-02			Prepared: 30-Aug-2022		Analyzed: 31-Aug-2022 23:38					
Beryllium	9	24.8	0.0342	0.400	ug/L	25.0	0.0520	98.8	75-125			D
Chromium	52	25.1	0.520	1.00	ug/L	25.0	2.31	91.0	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKH0759-MSD2)		Source: 22H0338-02			Prepared: 30-Aug-2022		Analyzed: 31-Aug-2022 23:44					
Beryllium	9	25.9	0.0342	0.400	ug/L	25.0	0.0520	104	75-125	4.68	20	D
Chromium	52	25.0	0.520	1.00	ug/L	25.0	2.31	90.8	75-125	0.25	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Zanna Satterwhite	Reported: 09-Sep-2022 15:20
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKH0731 - TWM EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0731-BLK1)						Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 12:24					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L							U
LCS (BKH0731-BS1)						Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 12:26					
Mercury, Dissolved	0.00221	0.000013	0.000100	mg/L	0.00200		111	80-120			
Duplicate (BKH0731-DUP1)						Source: 22H0338-03 Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 12:31					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L		ND					U
Matrix Spike (BKH0731-MS1)						Source: 22H0338-03 Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 12:33					
Mercury, Dissolved	0.00108	0.000013	0.000100	mg/L	0.00100	ND	108	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BKH0731-MSD1)						Source: 22H0338-03 Prepared: 29-Aug-2022 Analyzed: 01-Sep-2022 12:35					
Mercury, Dissolved	0.00102	0.000013	0.000100	mg/L	0.00100	ND	102	75-125	5.29	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKH0758 - REN - EPA 3010A M

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKH0758-BLK1)						Prepared: 30-Aug-2022 Analyzed: 30-Aug-2022 19:37						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Antimony, Dissolved	123	ND	0.102	0.200	ug/L							U
Beryllium, Dissolved	9	ND	0.0171	0.200	ug/L							U
Chromium, Dissolved	52	ND	0.260	0.500	ug/L							U
Chromium, Dissolved	53	ND	0.239	0.500	ug/L							U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L							U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L							U
Cadmium, Dissolved	114	ND	0.0400	0.100	ug/L							U
Copper, Dissolved	63	ND	0.173	0.500	ug/L							U
Copper, Dissolved	65	ND	0.350	0.500	ug/L							U
Nickel, Dissolved	60	ND	0.0792	0.500	ug/L							U
Nickel, Dissolved	62	ND	0.220	0.500	ug/L							U
Selenium, Dissolved	78	ND	0.179	0.500	ug/L							U
Zinc, Dissolved	66	ND	2.92	6.00	ug/L							U
Zinc, Dissolved	67	ND	0.940	6.00	ug/L							U

LCS (BKH0758-BS1)

Prepared: 30-Aug-2022 Analyzed: 30-Aug-2022 19:42

Antimony, Dissolved	121	24.9	0.101	0.200	ug/L	25.0		99.7	80-120
Antimony, Dissolved	123	25.3	0.102	0.200	ug/L	25.0		101	80-120
Beryllium, Dissolved	9	23.8	0.0171	0.200	ug/L	25.0		95.2	80-120
Chromium, Dissolved	52	26.1	0.260	0.500	ug/L	25.0		104	80-120
Chromium, Dissolved	53	26.3	0.239	0.500	ug/L	25.0		105	80-120
Lead, Dissolved	208	27.5	0.0513	0.100	ug/L	25.0		110	80-120
Silver, Dissolved	107	27.8	0.0220	0.200	ug/L	25.0		111	80-120
Thallium, Dissolved	205	27.0	0.0234	0.200	ug/L	25.0		108	80-120
Arsenic, Dissolved	75a	24.1	0.0373	0.200	ug/L	25.0		96.5	80-120
Cadmium, Dissolved	111	26.3	0.0300	0.100	ug/L	25.0		105	80-120
Cadmium, Dissolved	114	26.5	0.0400	0.100	ug/L	25.0		106	80-120
Copper, Dissolved	63	26.6	0.173	0.500	ug/L	25.0		106	80-120
Copper, Dissolved	65	26.6	0.350	0.500	ug/L	25.0		106	80-120
Nickel, Dissolved	60	25.9	0.0792	0.500	ug/L	25.0		104	80-120
Nickel, Dissolved	62	25.8	0.220	0.500	ug/L	25.0		103	80-120



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKH0758 - REN - EPA 3010A M

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKH0758-BS1)						Prepared: 30-Aug-2022 Analyzed: 30-Aug-2022 19:42						
Selenium, Dissolved	78	80.2	0.179	0.500	ug/L	80.0		100	80-120			
Zinc, Dissolved	66	84.0	2.92	6.00	ug/L	80.0		105	80-120			
Zinc, Dissolved	67	77.9	0.940	6.00	ug/L	80.0		97.4	80-120			

Duplicate (BKH0758-DUP1)						Source: 22H0338-03 Prepared: 30-Aug-2022 Analyzed: 31-Aug-2022 06:16						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L		ND					U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L		0.0260					U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L		ND					U
Arsenic, Dissolved	75a	0.398	0.0373	0.200	ug/L		0.397			0.25	20	
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L		ND					U
Copper, Dissolved	63	0.235	0.173	0.500	ug/L		0.489			70.20	20	L, J
Nickel, Dissolved	60	0.175	0.0792	0.500	ug/L		0.243			32.50	20	L, J
Selenium, Dissolved	78	ND	0.179	0.500	ug/L		ND					U
Zinc, Dissolved	66	ND	2.92	6.00	ug/L		ND					U

Matrix Spike (BKH0758-MS1)						Source: 22H0338-03 Prepared: 30-Aug-2022 Analyzed: 31-Aug-2022 06:19						
Antimony, Dissolved	121	23.9	0.101	0.200	ug/L	25.0	ND	95.6	75-125			
Silver, Dissolved	107	24.8	0.0220	0.200	ug/L	25.0	0.0260	99.2	75-125			
Thallium, Dissolved	205	23.8	0.0234	0.200	ug/L	25.0	ND	95.2	75-125			
Arsenic, Dissolved	75a	24.6	0.0373	0.200	ug/L	25.0	0.397	96.7	75-125			
Cadmium, Dissolved	111	25.4	0.0300	0.100	ug/L	25.0	ND	101	75-125			
Copper, Dissolved	63	26.2	0.173	0.500	ug/L	25.0	0.489	103	75-125			
Nickel, Dissolved	60	26.2	0.0792	0.500	ug/L	25.0	0.243	104	75-125			
Selenium, Dissolved	78	69.7	0.179	0.500	ug/L	80.0	ND	87.1	75-125			
Zinc, Dissolved	66	77.9	2.92	6.00	ug/L	80.0	ND	97.4	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKH0758-MSD1)						Source: 22H0338-03 Prepared: 30-Aug-2022 Analyzed: 31-Aug-2022 06:24						
Antimony, Dissolved	121	23.7	0.101	0.200	ug/L	25.0	ND	94.7	75-125	0.90	20	
Silver, Dissolved	107	24.7	0.0220	0.200	ug/L	25.0	0.0260	98.8	75-125	0.38	20	
Thallium, Dissolved	205	23.5	0.0234	0.200	ug/L	25.0	ND	94.1	75-125	1.17	20	
Arsenic, Dissolved	75a	23.6	0.0373	0.200	ug/L	25.0	0.397	92.8	75-125	4.01	20	
Cadmium, Dissolved	111	23.9	0.0300	0.100	ug/L	25.0	ND	95.4	75-125	6.11	20	
Copper, Dissolved	63	25.0	0.173	0.500	ug/L	25.0	0.489	98.2	75-125	4.36	20	
Nickel, Dissolved	60	25.0	0.0792	0.500	ug/L	25.0	0.243	99.1	75-125	4.53	20	



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Project Number: 150218
Project Manager: Zanna Satterwhite

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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKH0758 - REN - EPA 3010A M

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKH0758-MSD1)		Source: 22H0338-03		Prepared: 30-Aug-2022		Analyzed: 31-Aug-2022 06:24						
Selenium, Dissolved	78	67.9	0.179	0.500	ug/L	80.0	ND	84.9	75-125	2.55	20	
Zinc, Dissolved	66	74.1	2.92	6.00	ug/L	80.0	ND	92.7	75-125	4.99	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BKH0758-DUP2)		Source: 22H0338-03		Prepared: 30-Aug-2022		Analyzed: 31-Aug-2022 23:55						
Beryllium, Dissolved	9	0.0560	0.0342	0.400	ug/L		0.0620			10.20	20	J, D
Chromium, Dissolved	52	2.45	0.520	1.00	ug/L		2.86			15.30	20	D

Matrix Spike (BKH0758-MS2) Source: 22H0338-03 Prepared: 30-Aug-2022 Analyzed: 01-Sep-2022 00:00

Beryllium, Dissolved	9	25.4	0.0342	0.400	ug/L	25.0	0.0620	102	75-125			D
Chromium, Dissolved	52	25.3	0.520	1.00	ug/L	25.0	2.86	89.6	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKH0758-MSD2) Source: 22H0338-03 Prepared: 30-Aug-2022 Analyzed: 01-Sep-2022 00:05

Beryllium, Dissolved	9	26.1	0.0342	0.400	ug/L	25.0	0.0620	104	75-125	2.37	20	D
Chromium, Dissolved	52	24.8	0.520	1.00	ug/L	25.0	2.86	87.8	75-125	1.76	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKI0051 - REN - EPA 3010A M

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKI0051-BLK1)						Prepared: 02-Sep-2022 Analyzed: 02-Sep-2022 18:38						
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
LCS (BKI0051-BS1)						Prepared: 02-Sep-2022 Analyzed: 02-Sep-2022 18:43						
Lead, Dissolved	208	25.1	0.0513	0.100	ug/L	25.0		100	80-120			



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Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Silver-107	WADOE,WA-DW,DoD-ELAP,NELAP
Beryllium-9	NELAP,WADOE,DoD-ELAP
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-53	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
Antimony-121	NELAP,WADOE,DoD-ELAP
Antimony-123	NELAP
Thallium-205	WADOE,WA-DW,DoD-ELAP,NELAP
Silver-107	WA-DW,DoD-ELAP,NELAP
Beryllium-9	WADOE,DoD-ELAP,NELAP
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-53	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
Antimony-121	NELAP,WADOE,DoD-ELAP
Antimony-123	NELAP,WADOE,DoD-ELAP
Thallium-205	NELAP,WADOE,DoD-ELAP
EPA 6020B UCT-KED in Water	
Arsenic-75a	WADOE,WA-DW,DoD-ELAP,ADEC,NELAP
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Copper-63	NELAP,WADOE,DoD-ELAP
Copper-65	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Nickel-62	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP
Zinc-66	WADOE,WA-DW,DoD-ELAP
Zinc-67	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Copper-63	NELAP,WADOE,DoD-ELAP
Copper-65	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Nickel-62	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP



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Zinc-66 NELAP,WADOE,DoD-ELAP
Zinc-67 NELAP,WADOE,DoD-ELAP

EPA 7470A in Water

Mercury WADOE,NELAP,DoD-ELAP
Mercury WADOE,NELAP,DoD-ELAP

EPA 8082A in Water

Aroclor 1016 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1016 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 [2C] WADOE,DoD-ELAP,NELAP,ADEC

EPA 8260D in Water

Chloromethane DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane DoD-ELAP,ADEC,NELAP,WADOE
Acrolein DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane DoD-ELAP,ADEC,NELAP,WADOE
Acetone DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane DoD-ELAP,NELAP,WADOE
Methylene Chloride DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile DoD-ELAP,NELAP,WADOE
Carbon Disulfide DoD-ELAP,NELAP,WADOE



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trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Zanna Satterwhite

Reported:
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Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA 8270E in Water

Phenol	NELAP,DoD-ELAP
bis(2-chloroethyl) ether	NELAP,DoD-ELAP
2-Chlorophenol	NELAP,DoD-ELAP
1,3-Dichlorobenzene	NELAP,DoD-ELAP
1,4-Dichlorobenzene	NELAP,DoD-ELAP
1,2-Dichlorobenzene	NELAP,DoD-ELAP
Benzyl Alcohol	NELAP,DoD-ELAP
2,2'-Oxybis(1-chloropropane)	NELAP,DoD-ELAP
2-Methylphenol	NELAP,DoD-ELAP
Hexachloroethane	NELAP,DoD-ELAP
N-Nitroso-di-n-Propylamine	NELAP,DoD-ELAP
4-Methylphenol	NELAP,DoD-ELAP
Nitrobenzene	NELAP,DoD-ELAP
Isophorone	NELAP,DoD-ELAP
2-Nitrophenol	NELAP,DoD-ELAP
2,4-Dimethylphenol	NELAP,DoD-ELAP



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Bis(2-Chloroethoxy)methane	NELAP,DoD-ELAP
2,4-Dichlorophenol	NELAP,DoD-ELAP
1,2,4-Trichlorobenzene	NELAP,DoD-ELAP
Naphthalene	NELAP,DoD-ELAP
Benzoic acid	NELAP,DoD-ELAP
4-Chloroaniline	NELAP,DoD-ELAP
Hexachlorobutadiene	NELAP,DoD-ELAP
4-Chloro-3-Methylphenol	NELAP,DoD-ELAP
2-Methylnaphthalene	NELAP,DoD-ELAP
Hexachlorocyclopentadiene	NELAP,DoD-ELAP
2,4,6-Trichlorophenol	NELAP,DoD-ELAP
2,4,5-Trichlorophenol	NELAP,DoD-ELAP
2-Chloronaphthalene	NELAP,DoD-ELAP
2-Nitroaniline	NELAP,DoD-ELAP
Acenaphthylene	NELAP,DoD-ELAP
Dimethylphthalate	NELAP,DoD-ELAP
2,6-Dinitrotoluene	NELAP,DoD-ELAP
Acenaphthene	NELAP,DoD-ELAP
3-Nitroaniline	NELAP,DoD-ELAP
2,4-Dinitrophenol	NELAP,DoD-ELAP
Dibenzofuran	NELAP,DoD-ELAP
4-Nitrophenol	NELAP,DoD-ELAP
2,4-Dinitrotoluene	NELAP,DoD-ELAP
Fluorene	NELAP,DoD-ELAP
4-Chlorophenylphenyl ether	NELAP,DoD-ELAP
Diethyl phthalate	NELAP,DoD-ELAP
4-Nitroaniline	NELAP,DoD-ELAP
4,6-Dinitro-2-methylphenol	NELAP,DoD-ELAP
N-Nitrosodiphenylamine	NELAP,DoD-ELAP
4-Bromophenyl phenyl ether	NELAP,DoD-ELAP
Hexachlorobenzene	NELAP,DoD-ELAP
Pentachlorophenol	NELAP,DoD-ELAP
Phenanthrene	NELAP,DoD-ELAP
Anthracene	NELAP,DoD-ELAP
Carbazole	NELAP,DoD-ELAP
Di-n-Butylphthalate	NELAP,DoD-ELAP
Fluoranthene	NELAP,DoD-ELAP
Pyrene	NELAP,DoD-ELAP
Butylbenzylphthalate	NELAP,DoD-ELAP



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Benzo(a)anthracene	NELAP,DoD-ELAP
3,3'-Dichlorobenzidine	NELAP,DoD-ELAP
Chrysene	NELAP,DoD-ELAP
bis(2-Ethylhexyl)phthalate	NELAP,DoD-ELAP
Di-n-Octylphthalate	NELAP,DoD-ELAP
Benzo(b)fluoranthene	NELAP,DoD-ELAP
Benzo(k)fluoranthene	NELAP,DoD-ELAP
Benzo(a)pyrene	NELAP,DoD-ELAP
Indeno(1,2,3-cd)pyrene	NELAP,DoD-ELAP
Dibenzo(a,h)anthracene	NELAP,DoD-ELAP
Benzo(g,h,i)perylene	NELAP,DoD-ELAP
N-Nitrosodimethylamine	NELAP,DoD-ELAP
1-Methylnaphthalene	NELAP,DoD-ELAP

EPA 8270E-SIM in Water

Naphthalene	ADEC,DoD-ELAP,NELAP,WADOE
2-Methylnaphthalene	ADEC,DoD-ELAP,NELAP
1-Methylnaphthalene	ADEC,DoD-ELAP,NELAP,WADOE
Biphenyl	NELAP
Acenaphthylene	ADEC,DoD-ELAP,NELAP,WADOE
Acenaphthene	ADEC,DoD-ELAP,NELAP,WADOE
Dibenzofuran	ADEC,DoD-ELAP,NELAP
Fluorene	ADEC,DoD-ELAP,NELAP,WADOE
Phenanthrene	ADEC,DoD-ELAP,NELAP,WADOE
Anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Carbazole	NELAP
Fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(a)anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Chrysene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(b)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(k)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(j)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(e)pyrene	NELAP
Benzo(a)pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Perylene	ADEC,NELAP
Indeno(1,2,3-cd)pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Dibenzo(a,h)anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(g,h,i)perylene	ADEC,DoD-ELAP,NELAP,WADOE



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Reported:
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NWTPH-Dx in Water

Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023



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Project: West Duwamish CSO
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Project Manager: Zanna Satterwhite

Reported:
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Notes and Definitions

- * Flagged value is not within established control limits.
- D The reported value is from a dilution
- D1 Surrogate was not detected due to sample extract dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- HC The natural concentration of the spiked analyte is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- J Estimated concentration value detected below the reporting limit.
- L Analyte concentration is ≤ 5 times the reporting limit and the replicate control limit defaults to \pm RL instead of 20% RPD
- P1 The reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ($< 20\%$ RSD, $< 20\%$ drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants

06 January 2023

Ali Cochrane
Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle, WA 98104

RE: West Duwamish CSO (150218)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
22K0471

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclose Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Shelly Fishel, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, LLC
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number: 22K0471	Turn-around Requested: Standard	Page: 1 of 1
ARI Client Company: Aspect Consulting	Phone:	Date: 11/23/22
Client Contact: Ali Cochran Acochran@aspectconsulting.com	No. of Coolers: 0	Ice Present?
Client Project Name: West Duwamish CSO	Cooler Temps: 	

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested										Notes/Comments
					NWTFH GX	Dx	Metals EPA 700-71208	2010A Disinfectant Residuals (Field Filtered)	GVOCs	VOCs EPA 4200	SEM/PAH-LL 8270D	PCB-LL AR 610.5	Chlorinated Hydrocarbons AR 610.5	PCB Congeners LL	
MW-1-112222	11/22/22	1330	W	17	X	X	X	X	X	X	X	X	X	X	Hold
MW-2-112222	"	0925	W	34											M/S/MSDU
MW-3-112322	11/23/22	0920	W	17											
MW-4-112222	11/23/22	1030	W	17											
MW-5-112122	11/21/22	1315	W	17											
MW-6-112122	"	1355	W	17											
MW-7-112322	11/23/22	1030	W	17											
MW-X-010100	01/01/20	0100	W	17											
THP Blank	08/31/22	1300	W	1	X						X				

Comments/Special Instructions	Relinquished by: (Signature) Ashley Provau	Received by: (Signature) Trist Smith	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Ashley Provau	Printed Name: Trist Smith	Printed Name:	Printed Name:
	Company: ASPECT	Company: AR2 LLC	Company:	Company:
	Date & Time: 11/23/22 1445	Date & Time: 11/23/22 14:45	Date & Time:	Date & Time:

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1-112222	22K0471-01	Water	22-Nov-2022 13:30	23-Nov-2022 14:45
MW-1-112222	22K0471-02	Water	22-Nov-2022 13:30	23-Nov-2022 14:45
MW-2-112222	22K0471-03	Water	22-Nov-2022 09:25	23-Nov-2022 14:45
MW-2-112222	22K0471-04	Water	22-Nov-2022 09:25	23-Nov-2022 14:45
MW-3-112322	22K0471-05	Water	23-Nov-2022 09:20	23-Nov-2022 14:45
MW-3-112322	22K0471-06	Water	23-Nov-2022 09:20	23-Nov-2022 14:45
MW-4-112222	22K0471-07	Water	22-Nov-2022 10:30	23-Nov-2022 14:45
MW-4-112222	22K0471-08	Water	22-Nov-2022 10:30	23-Nov-2022 14:45
MW-5-112122	22K0471-09	Water	21-Nov-2022 13:15	23-Nov-2022 14:45
MW-5-112122	22K0471-10	Water	21-Nov-2022 13:15	23-Nov-2022 14:45
MW-6-112122	22K0471-11	Water	21-Nov-2022 13:55	23-Nov-2022 14:45
MW-6-112122	22K0471-12	Water	21-Nov-2022 13:55	23-Nov-2022 14:45
MW-7-112322	22K0471-13	Water	23-Nov-2022 10:30	23-Nov-2022 14:45
MW-7-112322	22K0471-14	Water	23-Nov-2022 10:30	23-Nov-2022 14:45
MW-X-010100	22K0471-15	Water	23-Nov-2022 01:00	23-Nov-2022 14:45
MW-X-010100	22K0471-16	Water	23-Nov-2022 01:00	23-Nov-2022 14:45
Trip Blank	22K0471-17	Water	21-Nov-2022 13:15	23-Nov-2022 14:45



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Work Order Case Narrative

Client: Aspect Consulting, LLC.
Project: West Duwamish CSO
Project Number: 150218
Work Order: 22K0471

Sample receipt

Sample(s) as listed on the preceding page were received 23-Nov-2022 14:45 under ARI work order 22K0471. For details regarding sample receipt, please refer to the Cooler Receipt Form.

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except for Aroclor 1260 which was out of control high in the initial calibration verification on column zb-5. Data reported from passing column zb-35.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD)



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were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

The vial used for sample 22K0471-11 contained bubbles 2-4 mm in diameter.

It was noted that all sample vials had low level Dichloromethane and Acetone . Suspect contamination of vials not provided by ARI. As they were not lot checked at ARI to verify cleanliness prior to the addition of sample .

Initial and continuing calibrations were within method requirements except 2-Chloroethyl vinyl ether and 1,2-Dibromo-3-Chloropropane which were out of control low. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits except trans-1,2-Dichloroethene which was out of control high. The deviation has been flagged.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits except 2-Chloroethyl vinyl ether which was not detected in the MS or MSD. The deviations have been flagged.

Semivolatiles - EPA Method SW8270E

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except 1,4-Dichlorobenzene, 2,4-Dinitrophenol, 3-Nitroaniline, Benzoic Acid, bis(2-chloroethyl) ether and Pentachlorophenol which were out of control low and 1,3-Dichlorobenzene, 2,6-Dinitrotoluene, 2-Nitroaniline, 2-Nitrophenol, bis(2-Ethylhexyl)Phthalate and Butylbenzylphthalate which were out of control high in the initial calibration. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except Phenol-d5 which was out of control low in samples



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22K0471-11, 22K0471-13, 22K0471-15 and the method blank. Additionally 1,2-Dichlorobenzene-d4 was out of control low in the method blank. The deviations have been flagged.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits except 4-Chloroaniline which was out of control low and 2-Nitroaniline which were out of control high in the BSD. The deviations have been flagged.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits except 4-Chloroaniline which was out of control low in the MS and MSD. The deviations have been flagged.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270E-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except Anthracene which was out of control high in the initial calibration verification. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Total and Dissolved Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.



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Total and Dissolved Mercury - EPA Method 7470/7471

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits except o-Terphenyl which was out of control low in sample 22K0471-11. The deviation has been flagged.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.



WORK ORDER

22K0471

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

Preservation Confirmation

Container ID	Container Type	pH
22K0471-01 A	Glass NM, Amber, 1000 mL	
22K0471-01 B	Glass NM, Amber, 1000 mL	
22K0471-01 C	Glass NM, Amber, 500 mL	
22K0471-01 D	Glass NM, Amber, 500 mL	
22K0471-01 E	Glass NM, Amber, 500 mL	
22K0471-01 F	Glass NM, Amber, 500 mL	
22K0471-01 G	Glass NM, Amber, 500 mL	
22K0471-01 H	Glass NM, Amber, 500 mL	
22K0471-01 I	Glass NM, Amber, 500 mL	
22K0471-01 J	Glass NM, Amber, 500 mL	
22K0471-01 K	HDPE NM, 500 mL, 1:1 HNO3	<2 Pass (P)
22K0471-01 L	VOA Vial, Clear, 40 mL, HCL	
22K0471-01 M	VOA Vial, Clear, 40 mL, HCL	
22K0471-01 N	VOA Vial, Clear, 40 mL, HCL	
22K0471-01 O	VOA Vial, Clear, 40 mL, HCL	
22K0471-01 P	VOA Vial, Clear, 40 mL, HCL	
22K0471-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2 P
22K0471-03 A	VOA Vial, Clear, 40 mL, HCL	
22K0471-03 AA	Glass NM, Amber, 500 mL	
22K0471-03 AB	Glass NM, Amber, 500 mL	
22K0471-03 AC	Glass NM, Amber, 500 mL	
22K0471-03 AD	Glass NM, Amber, 500 mL	
22K0471-03 AE	HDPE NM, 500 mL, 1:1 HNO3	<2 P
22K0471-03 AF	HDPE NM, 500 mL, 1:1 HNO3	<2 P
22K0471-03 B	VOA Vial, Clear, 40 mL, HCL	
22K0471-03 C	VOA Vial, Clear, 40 mL, HCL	
22K0471-03 D	VOA Vial, Clear, 40 mL, HCL	
22K0471-03 E	VOA Vial, Clear, 40 mL, HCL	
22K0471-03 F	VOA Vial, Clear, 40 mL, HCL	
22K0471-03 G	VOA Vial, Clear, 40 mL, HCL	
22K0471-03 H	VOA Vial, Clear, 40 mL, HCL	
22K0471-03 I	VOA Vial, Clear, 40 mL, HCL	
22K0471-03 J	VOA Vial, Clear, 40 mL, HCL	
22K0471-03 K	Glass NM, Amber, 1000 mL	



WORK ORDER

22K0471

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.	Project Manager: Shelly Fishel
Project: West Duwamish CSO	Project Number: 150218

22K0471-03 L	Glass NM, Amber, 1000 mL		
22K0471-03 M	Glass NM, Amber, 1000 mL		
22K0471-03 N	Glass NM, Amber, 1000 mL		
22K0471-03 O	Glass NM, Amber, 500 mL		
22K0471-03 P	Glass NM, Amber, 500 mL		
22K0471-03 Q	Glass NM, Amber, 500 mL		
22K0471-03 R	Glass NM, Amber, 500 mL		
22K0471-03 S	Glass NM, Amber, 500 mL		
22K0471-03 T	Glass NM, Amber, 500 mL		
22K0471-03 U	Glass NM, Amber, 500 mL		
22K0471-03 V	Glass NM, Amber, 500 mL		
22K0471-03 W	Glass NM, Amber, 500 mL		
22K0471-03 X	Glass NM, Amber, 500 mL		
22K0471-03 Y	Glass NM, Amber, 500 mL		
22K0471-03 Z	Glass NM, Amber, 500 mL		
22K0471-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
22K0471-04 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
22K0471-05 A	Glass NM, Amber, 1000 mL		
22K0471-05 B	Glass NM, Amber, 1000 mL		
22K0471-05 C	Glass NM, Amber, 500 mL		
22K0471-05 D	Glass NM, Amber, 500 mL		
22K0471-05 E	Glass NM, Amber, 500 mL		
22K0471-05 F	Glass NM, Amber, 500 mL		
22K0471-05 G	Glass NM, Amber, 500 mL		
22K0471-05 H	Glass NM, Amber, 500 mL		
22K0471-05 I	Glass NM, Amber, 500 mL		
22K0471-05 J	Glass NM, Amber, 500 mL		
22K0471-05 K	HDPE NM, 500 mL, 1:1 HNO3	L2	P
22K0471-05 L	VOA Vial, Clear, 40 mL, HCL		
22K0471-05 M	VOA Vial, Clear, 40 mL, HCL		
22K0471-05 N	VOA Vial, Clear, 40 mL, HCL		
22K0471-05 O	VOA Vial, Clear, 40 mL, HCL		
22K0471-05 P	VOA Vial, Clear, 40 mL, HCL		
22K0471-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2	P
22K0471-07 A	Glass NM, Amber, 1000 mL		
22K0471-07 B	Glass NM, Amber, 1000 mL		



WORK ORDER

22K0471

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Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

22K0471-07 C	Glass NM, Amber, 500 mL		
22K0471-07 D	Glass NM, Amber, 500 mL		
22K0471-07 E	Glass NM, Amber, 500 mL		
22K0471-07 F	Glass NM, Amber, 500 mL		
22K0471-07 G	Glass NM, Amber, 500 mL		
22K0471-07 H	Glass NM, Amber, 500 mL		
22K0471-07 I	Glass NM, Amber, 500 mL		
22K0471-07 J	Glass NM, Amber, 500 mL		
22K0471-07 K	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
22K0471-07 L	VOA Vial, Clear, 40 mL, HCL		
22K0471-07 M	VOA Vial, Clear, 40 mL, HCL		
22K0471-07 N	VOA Vial, Clear, 40 mL, HCL		
22K0471-07 O	VOA Vial, Clear, 40 mL, HCL		
22K0471-07 P	VOA Vial, Clear, 40 mL, HCL		
22K0471-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LZ	P
22K0471-09 A	Glass NM, Amber, 1000 mL		
22K0471-09 B	Glass NM, Amber, 1000 mL		
22K0471-09 C	Glass NM, Amber, 500 mL		
22K0471-09 D	Glass NM, Amber, 500 mL		
22K0471-09 E	Glass NM, Amber, 500 mL		
22K0471-09 F	Glass NM, Amber, 500 mL		
22K0471-09 G	Glass NM, Amber, 500 mL		
22K0471-09 H	Glass NM, Amber, 500 mL		
22K0471-09 I	Glass NM, Amber, 500 mL		
22K0471-09 J	Glass NM, Amber, 500 mL		
22K0471-09 K	HDPE NM, 500 mL, 1:1 HNO3	LZ	P
22K0471-09 L	VOA Vial, Clear, 40 mL, HCL		
22K0471-09 M	VOA Vial, Clear, 40 mL, HCL		
22K0471-09 N	VOA Vial, Clear, 40 mL, HCL		
22K0471-09 O	VOA Vial, Clear, 40 mL, HCL		
22K0471-09 P	VOA Vial, Clear, 40 mL, HCL		
22K0471-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LZ	P
22K0471-11 A	Glass NM, Amber, 1000 mL		
22K0471-11 B	Glass NM, Amber, 1000 mL		
22K0471-11 C	Glass NM, Amber, 500 mL		
22K0471-11 D	Glass NM, Amber, 500 mL		



WORK ORDER

22K0471

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Client: Aspect Consulting, LLC.	Project Manager: Shelly Fishel
Project: West Duwamish CSO	Project Number: 150218

22K0471-11 E	Glass NM, Amber, 500 mL	
22K0471-11 F	Glass NM, Amber, 500 mL	
22K0471-11 G	Glass NM, Amber, 500 mL	
22K0471-11 H	Glass NM, Amber, 500 mL	
22K0471-11 I	Glass NM, Amber, 500 mL	
22K0471-11 J	Glass NM, Amber, 500 mL	
22K0471-11 K	HDPE NM, 500 mL, 1:1 HNO3	CC P
22K0471-11 L	VOA Vial, Clear, 40 mL, HCL	
22K0471-11 M	VOA Vial, Clear, 40 mL, HCL	
22K0471-11 N	VOA Vial, Clear, 40 mL, HCL	
22K0471-11 O	VOA Vial, Clear, 40 mL, HCL	
22K0471-11 P	VOA Vial, Clear, 40 mL, HCL	
22K0471-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	CC P
22K0471-13 A	Glass NM, Amber, 1000 mL	
22K0471-13 B	Glass NM, Amber, 1000 mL	
22K0471-13 C	Glass NM, Amber, 500 mL	
22K0471-13 D	Glass NM, Amber, 500 mL	
22K0471-13 E	Glass NM, Amber, 500 mL	
22K0471-13 F	Glass NM, Amber, 500 mL	
22K0471-13 G	Glass NM, Amber, 500 mL	
22K0471-13 H	Glass NM, Amber, 500 mL	
22K0471-13 I	Glass NM, Amber, 500 mL	
22K0471-13 J	Glass NM, Amber, 500 mL	
22K0471-13 K	HDPE NM, 500 mL, 1:1 HNO3	CC P
22K0471-13 L	VOA Vial, Clear, 40 mL, HCL	
22K0471-13 M	VOA Vial, Clear, 40 mL, HCL	
22K0471-13 N	VOA Vial, Clear, 40 mL, HCL	
22K0471-13 O	VOA Vial, Clear, 40 mL, HCL	
22K0471-13 P	VOA Vial, Clear, 40 mL, HCL	
22K0471-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	CC P
22K0471-15 A	Glass NM, Amber, 1000 mL	
22K0471-15 B	Glass NM, Amber, 1000 mL	
22K0471-15 C	Glass NM, Amber, 500 mL	
22K0471-15 D	Glass NM, Amber, 500 mL	
22K0471-15 E	Glass NM, Amber, 500 mL	
22K0471-15 F	Glass NM, Amber, 500 mL	



WORK ORDER

22K0471

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Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

22K0471-15 G	Glass NM, Amber, 500 mL	
22K0471-15 H	Glass NM, Amber, 500 mL	
22K0471-15 I	Glass NM, Amber, 500 mL	
22K0471-15 J	Glass NM, Amber, 500 mL	
22K0471-15 K	HDPE NM, 500 mL, 1:1 HNO ₃	L2 P
22K0471-15 L	VOA Vial, Clear, 40 mL, HCL	
22K0471-15 M	VOA Vial, Clear, 40 mL, HCL	
22K0471-15 N	VOA Vial, Clear, 40 mL, HCL	
22K0471-15 O	VOA Vial, Clear, 40 mL, HCL	
22K0471-15 P	VOA Vial, Clear, 40 mL, HCL	
22K0471-16 A	HDPE NM, 500 mL, 1:1 HNO ₃ (FF)	L2 P
22K0471-17 A	VOA Vial, Clear, 40 mL, HCL	

PIB

Preservation Confirmed By

11/25/22

Date



Cooler Receipt Form

ARI Client: Aspect Consulting

Project Name: Crest Dynamics

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 22K0471

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 14:15 4.6 5.6 -1.6 -1.5 -1.4 -1.3°

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 7009708

Cooler Accepted by: J. Smith Date: 11/23/22 Time: 14:15

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

How were bottles sealed in plastic bags? Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI NA 8/31/22

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: _____ Date: _____ Time: 9:06 Labels checked by: _____

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

trip blank is from Fremont Analytical,

By: PIB Date: 11/25/22



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-1-112222
22K0471-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/22/2022 13:30

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 13:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKK0756
Prepared: 11/28/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22K0471-01 N

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	0.74	ug/L	J
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-1-112222
22K0471-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/22/2022 13:30

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 13:21

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-1-112222
22K0471-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/22/2022 13:30

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 13:21

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	110	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	95.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	94.3	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	101	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 06-Jan-2023 18:12
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MW-1-112222
22K0471-01 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 11/22/2022 13:30
Instrument: NT2 Analyst: PKC Analyzed: 11/28/2022 13:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0471-01 N
Preparation Batch: BKK0756 Sample Size: 10 mL
Prepared: 11/28/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	95.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	94.3	%	



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-1-112222
22K0471-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/22/2022 13:30

Instrument: NT14 Analyst: VTS

Analyzed: 01/05/2023 22:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKK0694
Prepared: 11/28/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22K0471-01 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	0.2	ug/L	
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-1-112222
22K0471-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/22/2022 13:30

Instrument: NT14 Analyst: VTS

Analyzed: 01/05/2023 22:11

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	0.07	ug/L	J
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	0.3	ug/L	
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>46.3 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>31.0 %</i>	
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>66.9 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>44.5 %</i>	
<i>Surrogate: Nitrobenzene-d5</i>					<i>30-160 %</i>	<i>82.6 %</i>	



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Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-1-112222
22K0471-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/22/2022 13:30

Instrument: NT14 Analyst: VTS

Analyzed: 01/05/2023 22:11

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	69.7	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	94.8	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	109	%	



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Reported:
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MW-1-112222
22K0471-01 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 11/22/2022 13:30
Instrument: NT18 Analyst: VTS Analyzed: 12/22/2022 21:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-01 A 01
Preparation Batch: BKK0729 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22K0471-01 A 01
Cleanup Batch: CKL0153 Initial Volume: 0.5 uL
Cleaned: 13-Dec-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.008	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.002	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 57.2 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 43.8 %
Surrogate: Fluoranthene-d10 57-120 % 70.5 %



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MW-1-112222
22K0471-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 11/22/2022 13:30
Instrument: FID3 Analyst: AA Analyzed: 12/08/2022 08:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-01 D 01
Preparation Batch: BKK0731 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	0.136	mg/L	
HC ID: DRO						
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
Surrogate: <i>o</i> -Terphenyl			50-150 %	66.8	%	



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MW-1-112222
22K0471-01 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 11/22/2022 13:30

Instrument: ECD7 Analyst: RJL

Analyzed: 12/18/2022 10:04

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKK0730 Prepared: 11/28/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22K0471-01 B 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKL0201 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-01 B 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKL0199 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-01 B 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKL0200 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-01 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	84.4 %
Surrogate: Tetrachlorometaxylene	32-120 %	71.6 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	79.7 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	69.4 %



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MW-1-112222
22K0471-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/22/2022 13:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/12/2022 23:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-01 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	2	0.0342	0.400	0.0720	ug/L	J, D
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/19/2022 23:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-01 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium	7440-47-3	5	1.30	2.50	2.79	ug/L	D



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Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-1-112222
22K0471-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 11/22/2022 13:30

Instrument: ICPMS1 Analyst: MCB

Analyzed: 12/12/2022 23:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M
Preparation Batch: BKL0194
Prepared: 12/08/2022

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 22K0471-01 K 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.701	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	0.0400	ug/L	J
Copper	7440-50-8	1	0.173	0.500	0.466	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.232	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-1-112222
22K0471-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 11/22/2022 13:30
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 13:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-01 K
Preparation Batch: BKK0825 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000066	mg/L	J



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MW-1-112222
22K0471-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 11/22/2022 13:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/12/2022 23:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-02 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	2	0.0342	0.400	0.0660	ug/L	J, D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/19/2022 21:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-02 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium, Dissolved	7440-47-3	5	1.30	2.50	2.44	ug/L	J, D



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MW-1-112222
22K0471-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/22/2022 13:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/12/2022 23:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-02 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.702	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.217	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.300	ug/L	J
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-1-112222
22K0471-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 11/22/2022 13:30
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 13:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-02 A
Preparation Batch: BKK0826 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-2-112222
22K0471-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/22/2022 09:25

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 13:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKK0756
Prepared: 11/28/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22K0471-03 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	3.53	ug/L	
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-2-112222
22K0471-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/22/2022 09:25

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 13:41

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-2-112222
22K0471-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/22/2022 09:25

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 13:41

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	107	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	96.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	92.9	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	101	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 06-Jan-2023 18:12
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MW-2-112222
22K0471-03 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 11/22/2022 09:25
Instrument: NT2 Analyst: PKC Analyzed: 11/28/2022 13:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0471-03 A
Preparation Batch: BKK0756 Sample Size: 10 mL
Prepared: 11/28/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	92.9	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-2-112222
22K0471-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/22/2022 09:25

Instrument: NT14 Analyst: VTS

Analyzed: 01/05/2023 22:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKK0694
Prepared: 11/28/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22K0471-03 AC 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	0.2	ug/L	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-2-112222
22K0471-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/22/2022 09:25

Instrument: NT14 Analyst: VTS

Analyzed: 01/05/2023 22:47

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	0.1	ug/L	J
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>48.4 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>30.9 %</i>	
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>72.3 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>40.4 %</i>	
<i>Surrogate: Nitrobenzene-d5</i>					<i>30-160 %</i>	<i>94.0 %</i>	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-2-112222
22K0471-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/22/2022 09:25

Instrument: NT14 Analyst: VTS

Analyzed: 01/05/2023 22:47

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	62.2	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	80.8	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	124	%	



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Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-2-112222
22K0471-03 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 11/22/2022 09:25

Instrument: NT18 Analyst: VTS

Analyzed: 12/22/2022 22:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-03 AA 01
Preparation Batch: BKK0729 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22K0471-03 AA 01
Cleanup Batch: CKL0153 Initial Volume: 0.5 uL
Cleaned: 13-Dec-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.028	ug/L	
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.012	ug/L	
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.010	ug/L	
Acenaphthylene	208-96-8	1	0.002	0.010	0.003	ug/L	J
Acenaphthene	83-32-9	1	0.003	0.010	0.187	ug/L	
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	0.008	ug/L	J
Phenanthrene	85-01-8	1	0.001	0.010	0.033	ug/L	
Anthracene	120-12-7	1	0.001	0.010	0.010	ug/L	Q
Carbazole	86-74-8	1	0.001	0.010	0.002	ug/L	J
Fluoranthene	206-44-0	1	0.002	0.010	0.016	ug/L	
Pyrene	129-00-0	1	0.001	0.010	0.020	ug/L	
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	0.004	ug/L	J
Chrysene	218-01-9	1	0.0009	0.010	0.006	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.003	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	0.003	ug/L	J
Benzofluoranthenes, Total		1	0.004	0.010	0.008	ug/L	J
Benzo(a)pyrene	50-32-8	1	0.002	0.010	0.004	ug/L	J
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	0.002	ug/L	J
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	0.004	ug/L	J

Surrogate: 2-Methylnaphthalene-d10 42-120 % 57.9 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 44.9 %
Surrogate: Fluoranthene-d10 57-120 % 73.9 %



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MW-2-112222
22K0471-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 11/22/2022 09:25
Instrument: FID3 Analyst: AA Analyzed: 12/08/2022 08:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-03 AD 01
Preparation Batch: BKK0731 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	0.177	mg/L	
HC ID: DRO						
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
Surrogate: <i>o</i> -Terphenyl			50-150 %	90.1	%	



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MW-2-112222
22K0471-03 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 11/22/2022 09:25
Instrument: ECD7 Analyst: RJL Analyzed: 12/18/2022 10:25

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKK0730 Prepared: 11/28/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22K0471-03 AB 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKL0201 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-03 AB 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKL0199 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-03 AB 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKL0200 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-03 AB 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	74.8	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	78.1	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	70.1	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	75.5	%



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MW-2-112222
22K0471-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/22/2022 09:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 02:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-03 AF 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	0.0690	ug/L	J
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/19/2022 23:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-03 AF 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium	7440-47-3	5	1.30	2.50	ND	ug/L	U



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MW-2-112222
22K0471-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 11/22/2022 09:25

Instrument: ICPMS1 Analyst: MCB

Analyzed: 12/13/2022 02:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M
Preparation Batch: BKL0194
Prepared: 12/08/2022

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 22K0471-03 AF 01

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.207	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.248	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.169	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-2-112222
22K0471-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 11/22/2022 09:25
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 13:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-03 AF
Preparation Batch: BKK0825 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000094	mg/L	J



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MW-2-112222
22K0471-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 11/22/2022 09:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 01:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-04 B 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/19/2022 22:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-04 B 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium, Dissolved	7440-47-3	5	1.30	2.50	ND	ug/L	U



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MW-2-112222
22K0471-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/22/2022 09:25
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 01:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-04 B 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.192	ug/L	J
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.163	ug/L	J
Selenium, Dissolved	7782-49-2	2	0.358	1.00	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-2-112222
22K0471-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 11/22/2022 09:25
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 13:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-04 B
Preparation Batch: BKK0826 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project Manager: Ali Cochrane

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MW-3-112322
22K0471-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/23/2022 09:20

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 14:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKK0756
Prepared: 11/28/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22K0471-05 N

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	13.2	ug/L	
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	0.84	ug/L	J
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-3-112322
22K0471-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/23/2022 09:20

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 14:02

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-3-112322
22K0471-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/23/2022 09:20

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 14:02

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	111	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	96.7	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	93.2	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	99.7	%	



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MW-3-112322
22K0471-05 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 11/23/2022 09:20
Instrument: NT2 Analyst: PKC Analyzed: 11/28/2022 14:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0471-05 N
Preparation Batch: BKK0756 Sample Size: 10 mL
Prepared: 11/28/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.7	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	93.2	%	



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Reported:
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MW-3-112322
22K0471-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/23/2022 09:20

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 00:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKK0694
Prepared: 11/28/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22K0471-05 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	0.07	ug/L	J
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	0.1	ug/L	J
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-3-112322
22K0471-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/23/2022 09:20

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 00:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	0.1	ug/L	J
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	0.8	ug/L	J
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	0.2	ug/L	J
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>47.1 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>31.0 %</i>	
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>67.9 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>39.3 %</i>	
<i>Surrogate: Nitrobenzene-d5</i>					<i>30-160 %</i>	<i>70.4 %</i>	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-3-112322
22K0471-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/23/2022 09:20

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 00:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	57.8	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	88.4	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	101	%	



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Reported:
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MW-3-112322
22K0471-05 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 11/23/2022 09:20
Instrument: NT18 Analyst: VTS Analyzed: 12/22/2022 23:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-05 A 01
Preparation Batch: BKK0729 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22K0471-05 A 01
Cleanup Batch: CKL0153 Initial Volume: 0.5 uL
Cleaned: 13-Dec-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.012	ug/L	
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.003	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	0.004	ug/L	J
Dibenzofuran	132-64-9	1	0.002	0.010	0.003	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	0.004	ug/L	J
Phenanthrene	85-01-8	1	0.001	0.010	0.010	ug/L	
Anthracene	120-12-7	1	0.001	0.010	0.006	ug/L	J
Carbazole	86-74-8	1	0.001	0.010	0.004	ug/L	J
Fluoranthene	206-44-0	1	0.002	0.010	0.015	ug/L	
Pyrene	129-00-0	1	0.001	0.010	0.012	ug/L	
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	0.001	ug/L	J
Chrysene	218-01-9	1	0.0009	0.010	0.004	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.0008	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 61.5 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 45.3 %
Surrogate: Fluoranthene-d10 57-120 % 72.5 %



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MW-3-112322
22K0471-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 11/23/2022 09:20
Instrument: FID3 Analyst: AA Analyzed: 12/08/2022 09:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-05 D 01
Preparation Batch: BKK0731 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	0.114	mg/L	
HC ID: DRO						
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	94.5	%	



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MW-3-112322
22K0471-05 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 11/23/2022 09:20
Instrument: ECD7 Analyst: RJL Analyzed: 12/18/2022 10:46

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKK0730 Prepared: 11/28/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22K0471-05 B 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKL0201 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-05 B 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKL0199 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-05 B 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKL0200 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-05 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	42.1	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	36.7	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	38.5	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	35.5	%



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Project Manager: Ali Cochrane

Reported:
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MW-3-112322
22K0471-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 11/23/2022 09:20

Instrument: ICPMS1 Analyst: MCB

Analyzed: 12/13/2022 02:00

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22K0471-05 K 01

Preparation Batch: BKL0194

Sample Size: 25 mL

Prepared: 12/08/2022

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	0.190	ug/L	J
Beryllium	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Chromium	7440-47-3	2	0.520	1.00	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	0.132	ug/L	
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-3-112322
22K0471-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 11/23/2022 09:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 02:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-05 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.65	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	0.0620	ug/L	J
Copper	7440-50-8	1	0.173	0.500	1.42	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	1.38	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	4.23	ug/L	J



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MW-3-112322
22K0471-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 11/23/2022 09:20
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 13:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-05 K
Preparation Batch: BKK0825 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000073	mg/L	J



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MW-3-112322
22K0471-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 11/23/2022 09:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 00:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-06 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.165	ug/L	J
Beryllium, Dissolved	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/19/2022 22:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-06 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium, Dissolved	7440-47-3	5	1.30	2.50	ND	ug/L	U



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MW-3-112322
22K0471-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/23/2022 09:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 00:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-06 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.53	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	0.0490	ug/L	J
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.209	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	1.29	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	3.56	ug/L	J



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MW-3-112322
22K0471-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 11/23/2022 09:20
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 13:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-06 A
Preparation Batch: BKK0826 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Reported:
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MW-4-112222
22K0471-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/22/2022 10:30

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 14:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKK0756
Prepared: 11/28/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22K0471-07 M

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	0.43	ug/L	J
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	1.34	ug/L	
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-4-112222
22K0471-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/22/2022 10:30

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 14:22

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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MW-4-112222
22K0471-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 11/22/2022 10:30
Instrument: NT2 Analyst: PKC Analyzed: 11/28/2022 14:22

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	111	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	95.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	90.0	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	97.6	%	



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MW-4-112222
22K0471-07 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 11/22/2022 10:30
Instrument: NT2 Analyst: PKC Analyzed: 11/28/2022 14:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0471-07 M
Preparation Batch: BKK0756 Sample Size: 10 mL
Prepared: 11/28/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	95.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	90.0	%	



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MW-4-112222
22K0471-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/22/2022 10:30

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 01:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKK0694
Prepared: 11/28/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22K0471-07 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	0.05	ug/L	J
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	0.3	ug/L	J
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project Manager: Ali Cochrane

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MW-4-112222
22K0471-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/22/2022 10:30

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 01:12

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	0.1	ug/L	J
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U

Surrogate: 2-Fluorophenol

30-160 % 50.2 %

Surrogate: Phenol-d5

30-160 % 32.2 %

Surrogate: 2-Chlorophenol-d4

30-160 % 70.8 %

Surrogate: 1,2-Dichlorobenzene-d4

30-160 % 41.5 %

Surrogate: Nitrobenzene-d5

30-160 % 82.3 %



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MW-4-112222
22K0471-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 11/22/2022 10:30
Instrument: NT14 Analyst: VTS Analyzed: 01/06/2023 01:12

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	63.6	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	82.6	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	103	%	



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MW-4-112222
22K0471-07 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 11/22/2022 10:30
Instrument: NT18 Analyst: VTS Analyzed: 12/23/2022 00:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-07 A 01
Preparation Batch: BKK0729 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22K0471-07 A 01
Cleanup Batch: CKL0153 Initial Volume: 0.5 uL
Cleaned: 13-Dec-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.007	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.002	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.001	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.001	0.010	0.004	ug/L	J
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	0.001	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.0009	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	0.001	ug/L	J
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 53.3 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 43.4 %
Surrogate: Fluoranthene-d10 57-120 % 69.1 %



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MW-4-112222
22K0471-07 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 11/22/2022 10:30
Instrument: FID3 Analyst: AA Analyzed: 12/08/2022 10:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-07 D 01
Preparation Batch: BKK0731 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	98.4	%	



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MW-4-112222
22K0471-07 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 11/22/2022 10:30
Instrument: ECD7 Analyst: RJL Analyzed: 12/18/2022 11:08

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKK0730 Prepared: 11/28/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22K0471-07 B 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKL0201 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-07 B 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKL0199 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-07 B 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKL0200 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-07 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	77.5	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	79.1	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	72.8	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	75.1	%



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MW-4-112222
22K0471-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/22/2022 10:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 02:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-07 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	0.378	ug/L	
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/19/2022 23:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-07 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium	7440-47-3	5	1.30	2.50	1.33	ug/L	J, D



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MW-4-112222
22K0471-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 11/22/2022 10:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 02:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-07 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.449	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	1.36	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	0.865	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-4-112222
22K0471-07 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 11/22/2022 10:30
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 13:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-07 K
Preparation Batch: BKK0825 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000031	mg/L	J



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MW-4-112222
22K0471-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 11/22/2022 10:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 00:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-08 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.118	ug/L	J
Beryllium, Dissolved	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/19/2022 22:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-08 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium, Dissolved	7440-47-3	5	1.30	2.50	ND	ug/L	U



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MW-4-112222
22K0471-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/22/2022 10:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 00:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-08 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.364	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.277	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.356	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-4-112222
22K0471-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 11/22/2022 10:30
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 14:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-08 A
Preparation Batch: BKK0826 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-5-112122
22K0471-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/21/2022 13:15

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKK0756
Prepared: 11/28/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22K0471-09 L

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	0.47	ug/L	J
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	0.70	ug/L	J
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-5-112122
22K0471-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/21/2022 13:15

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 14:43

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-5-112122
22K0471-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/21/2022 13:15

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 14:43

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	111	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	96.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	91.3	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	101	%	



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MW-5-112122
22K0471-09 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 11/21/2022 13:15
Instrument: NT2 Analyst: PKC Analyzed: 11/28/2022 14:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0471-09 L
Preparation Batch: BKK0756 Sample Size: 10 mL
Prepared: 11/28/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	91.3	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-5-112122
22K0471-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/21/2022 13:15

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 01:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKK0694
Prepared: 11/28/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22K0471-09 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-5-112122
22K0471-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/21/2022 13:15

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 01:48

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	0.08	ug/L	J
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>50.9 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>33.6 %</i>	
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>72.4 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>54.1 %</i>	
<i>Surrogate: Nitrobenzene-d5</i>					<i>30-160 %</i>	<i>92.5 %</i>	



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MW-5-112122
22K0471-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 11/21/2022 13:15
Instrument: NT14 Analyst: VTS Analyzed: 01/06/2023 01:48

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	71.2	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	77.8	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	105	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-5-112122
22K0471-09 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 11/21/2022 13:15

Instrument: NT18 Analyst: VTS

Analyzed: 12/23/2022 00:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-09 A 01
Preparation Batch: BKK0729 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22K0471-09 A 01
Cleanup Batch: CKL0153 Initial Volume: 0.5 uL
Cleaned: 13-Dec-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.007	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.002	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.001	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 55.8 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 44.4 %

Surrogate: Fluoranthene-d10

57-120 % 68.9 %



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MW-5-112122
22K0471-09 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 11/21/2022 13:15
Instrument: FID3 Analyst: AA Analyzed: 12/08/2022 10:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-09 D 01
Preparation Batch: BKK0731 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	85.8	%	



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MW-5-112122
22K0471-09 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 11/21/2022 13:15

Instrument: ECD7 Analyst: RJL

Analyzed: 12/18/2022 11:29

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKK0730 Prepared: 11/28/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22K0471-09 B 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKL0201 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-09 B 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKL0199 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-09 B 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKL0200 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-09 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	68.3	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	71.3	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	66.0	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	69.0	%



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MW-5-112122
22K0471-09 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/21/2022 13:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 02:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-09 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/19/2022 23:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-09 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium	7440-47-3	5	1.30	2.50	ND	ug/L	U



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MW-5-112122
22K0471-09 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 11/21/2022 13:15

Instrument: ICPMS1 Analyst: MCB

Analyzed: 12/13/2022 02:09

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22K0471-09 K 01

Preparation Batch: BKL0194

Sample Size: 25 mL

Prepared: 12/08/2022

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	2.24	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	0.0400	ug/L	J
Copper	7440-50-8	1	0.173	0.500	0.394	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.538	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-5-112122
22K0471-09 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 11/21/2022 13:15
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 13:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-09 K
Preparation Batch: BKK0825 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-5-112122
22K0471-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 11/21/2022 13:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 00:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-10 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	2.15	ug/L	
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/19/2022 22:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-10 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium, Dissolved	7440-47-3	5	1.30	2.50	ND	ug/L	U



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MW-5-112122
22K0471-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED

Sampled: 11/21/2022 13:15

Instrument: ICPMS1 Analyst: MCB

Analyzed: 12/13/2022 00:46

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22K0471-10 A 01

Preparation Batch: BKL0195

Sample Size: 25 mL

Prepared: 12/08/2022

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	2.16	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.280	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.518	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-5-112122
22K0471-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 11/21/2022 13:15
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 14:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-10 A
Preparation Batch: BKK0826 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project Manager: Ali Cochrane

Reported:
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MW-6-112122
22K0471-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/21/2022 13:55

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 15:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKK0756
Prepared: 11/28/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22K0471-11 M

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	1.09	ug/L	
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project Manager: Ali Cochrane

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MW-6-112122
22K0471-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/21/2022 13:55

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 15:04

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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MW-6-112122
22K0471-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/21/2022 13:55

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 15:04

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	113	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	95.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	92.8	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	98.4	%	



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MW-6-112122
22K0471-11 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 11/21/2022 13:55
Instrument: NT2 Analyst: PKC Analyzed: 11/28/2022 15:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0471-11 M
Preparation Batch: BKK0756 Sample Size: 10 mL
Prepared: 11/28/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	95.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	92.8	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-6-112122
22K0471-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/21/2022 13:55

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 02:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKK0694
Prepared: 11/28/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22K0471-11 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	0.2	ug/L	
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-6-112122
22K0471-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/21/2022 13:55

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 02:24

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	0.09	ug/L	J
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>45.5 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>29.7 %</i>	*
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>62.9 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>56.8 %</i>	
<i>Surrogate: Nitrobenzene-d5</i>					<i>30-160 %</i>	<i>70.4 %</i>	



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MW-6-112122
22K0471-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 11/21/2022 13:55
Instrument: NT14 Analyst: VTS Analyzed: 01/06/2023 02:24

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	65.0	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	76.8	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	93.4	%	



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Project Number: 150218
Project Manager: Ali Cochrane

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MW-6-112122
22K0471-11 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 11/21/2022 13:55

Instrument: NT18 Analyst: VTS

Analyzed: 12/23/2022 01:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-11 A 01
Preparation Batch: BKK0729 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22K0471-11 A 01
Cleanup Batch: CKL0153 Initial Volume: 0.5 uL
Cleaned: 13-Dec-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.008	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.003	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.001	0.010	0.001	ug/L	J
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>					42-120 %	57.6	%
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					29-120 %	46.8	%
<i>Surrogate: Fluoranthene-d10</i>					57-120 %	72.6	%



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MW-6-112122
22K0471-11 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 11/21/2022 13:55
Instrument: FID3 Analyst: AA Analyzed: 12/08/2022 11:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-11 D 01
Preparation Batch: BKK0731 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	42.7	%	*



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MW-6-112122
22K0471-11 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 11/21/2022 13:55
Instrument: ECD7 Analyst: RJL Analyzed: 12/18/2022 11:50

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKK0730 Prepared: 11/28/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22K0471-11 B 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKL0201 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-11 B 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKL0199 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-11 B 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKL0200 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-11 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	75.1 %
Surrogate: Tetrachlorometaxylene	32-120 %	68.4 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	74.4 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	68.2 %



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MW-6-112122
22K0471-11 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/21/2022 13:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 02:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-11 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/19/2022 23:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-11 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium	7440-47-3	5	1.30	2.50	ND	ug/L	U



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MW-6-112122
22K0471-11 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 11/21/2022 13:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 02:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-11 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.24	ug/L	
Cadmium	7440-43-9	1	0.0400	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.326	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.580	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-6-112122
22K0471-11 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 11/21/2022 13:55
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 13:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-11 K
Preparation Batch: BKK0825 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-6-112122
22K0471-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 11/21/2022 13:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 00:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-12 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/19/2022 22:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-12 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium, Dissolved	7440-47-3	5	1.30	2.50	ND	ug/L	U



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MW-6-112122
22K0471-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/21/2022 13:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 00:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-12 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.05	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	0.0360	ug/L	J
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.421	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.416	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-6-112122
22K0471-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 11/21/2022 13:55
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 14:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-12 A
Preparation Batch: BKK0826 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-7-112322
22K0471-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/23/2022 10:30

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 15:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKK0756
Prepared: 11/28/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22K0471-13 M

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	0.65	ug/L	
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	0.75	ug/L	J
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



Aspect Consulting, LLC.
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-7-112322
22K0471-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/23/2022 10:30

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 15:25

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-7-112322
22K0471-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/23/2022 10:30

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 15:25

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	115	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	95.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	93.3	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	99.5	%	



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MW-7-112322
22K0471-13 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 11/23/2022 10:30
Instrument: NT2 Analyst: PKC Analyzed: 11/28/2022 15:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0471-13 M
Preparation Batch: BKK0756 Sample Size: 10 mL
Prepared: 11/28/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	95.4	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	93.3	%	



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Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-7-112322
22K0471-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/23/2022 10:30

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 03:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKK0694
Prepared: 11/28/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22K0471-13 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	0.06	ug/L	J
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	1.1	ug/L	
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-7-112322
22K0471-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/23/2022 10:30

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 03:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	46.9 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	28.2 %	*
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	68.6 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	47.1 %	
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	87.5 %	



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MW-7-112322
22K0471-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 11/23/2022 10:30
Instrument: NT14 Analyst: VTS Analyzed: 01/06/2023 03:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	62.7	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	77.5	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	96.9	%	



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06-Jan-2023 18:12

MW-7-112322
22K0471-13 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 11/23/2022 10:30
Instrument: NT18 Analyst: VTS Analyzed: 12/23/2022 01:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-13 A 01
Preparation Batch: BKK0729 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22K0471-13 A 01
Cleanup Batch: CKL0153 Initial Volume: 0.5 uL
Cleaned: 13-Dec-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.010	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.002	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.001	0.010	0.003	ug/L	J
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>					42-120 %	56.0	%
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					29-120 %	45.4	%
<i>Surrogate: Fluoranthene-d10</i>					57-120 %	70.3	%



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MW-7-112322
22K0471-13 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 11/23/2022 10:30
Instrument: FID3 Analyst: AA Analyzed: 12/08/2022 11:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-13 D 01
Preparation Batch: BKK0731 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	68.7	%	



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Reported:
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MW-7-112322
22K0471-13 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 11/23/2022 10:30

Instrument: ECD7 Analyst: RJL

Analyzed: 12/18/2022 12:11

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKK0730 Prepared: 11/28/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22K0471-13 B 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKL0201 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-13 B 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKL0199 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-13 B 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKL0200 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-13 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	76.4	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	66.0	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	73.2	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	65.3	%



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-7-112322
22K0471-13 (Water)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 11/23/2022 10:30

Instrument: ICPMS1 Analyst: MCB

Analyzed: 12/13/2022 02:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M
Preparation Batch: BKL0194
Prepared: 12/08/2022

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 22K0471-13 K 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD

Analyzed: 12/20/2022 00:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M
Preparation Batch: BKL0194
Prepared: 12/08/2022

Sample Size: 25 mL
Final Volume: 25 mL

Extract ID: 22K0471-13 K 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium	7440-47-3	5	1.30	2.50	ND	ug/L	U



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 06-Jan-2023 18:12
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MW-7-112322
22K0471-13 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 11/23/2022 10:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 02:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-13 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	3.01	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	3.32	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	1.80	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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Reported:
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MW-7-112322
22K0471-13 (Water)

Metals and Metallic Compounds

Method: EPA 7470A

Sampled: 11/23/2022 10:30

Instrument: HYDRA Analyst: ML

Analyzed: 12/01/2022 13:33

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: TWM EPA 7470A

Extract ID: 22K0471-13 K

Preparation Batch: BKK0825

Sample Size: 20 mL

Prepared: 11/30/2022

Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Mercury	7439-97-6	1	0.000013	0.000100	0.000083	mg/L	J



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MW-7-112322
22K0471-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 11/23/2022 10:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 00:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-14 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/20/2022 00:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-14 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium, Dissolved	7440-47-3	5	1.30	2.50	ND	ug/L	U



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MW-7-112322
22K0471-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/23/2022 10:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 00:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-14 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	2.95	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	1.03	ug/L	
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	1.68	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-7-112322
22K0471-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 11/23/2022 10:30
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 14:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-14 A
Preparation Batch: BKK0826 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-X-010100
22K0471-15 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/23/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 15:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BKK0756
Prepared: 11/28/2022

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22K0471-15 M

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	0.48	ug/L	J
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	14.1	ug/L	
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	1.37	ug/L	
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	1.98	ug/L	J
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project Manager: Ali Cochrane

Reported:
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MW-X-010100
22K0471-15 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/23/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 15:45

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-X-010100
22K0471-15 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/23/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 15:45

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	115	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	94.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	93.0	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	100	%	



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MW-X-010100
22K0471-15 (Water)

Volatile Organic Compounds

Method: NWTPHg

Sampled: 11/23/2022 01:00

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 15:45

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 22K0471-15 M

Preparation Batch: BKK0756

Sample Size: 10 mL

Prepared: 11/28/2022

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	94.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	93.0	%	



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Reported:
06-Jan-2023 18:12

MW-X-010100
22K0471-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/23/2022 01:00

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 03:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKK0694
Prepared: 11/28/2022

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22K0471-15 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	0.05	ug/L	J
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	0.05	ug/L	J
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

MW-X-010100
22K0471-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 11/23/2022 01:00

Instrument: NT14 Analyst: VTS

Analyzed: 01/06/2023 03:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	0.6	ug/L	J
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	0.2	ug/L	J
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	44.7 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	29.5 %	*
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	68.6 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	44.1 %	
<i>Surrogate: Nitrobenzene-d5</i>					30-160 %	86.6 %	



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MW-X-010100
22K0471-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 11/23/2022 01:00
Instrument: NT14 Analyst: VTS Analyzed: 01/06/2023 03:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	64.9	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	77.8	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	102	%	



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Project Manager: Ali Cochrane

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MW-X-010100
22K0471-15 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 11/23/2022 01:00

Instrument: NT18 Analyst: VTS

Analyzed: 12/23/2022 02:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-15 A 01
Preparation Batch: BKK0729 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22K0471-15 A 01
Cleanup Batch: CKL0153 Initial Volume: 0.5 uL
Cleaned: 13-Dec-2022 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.009	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.003	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.003	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	0.003	ug/L	J
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	0.003	ug/L	J
Phenanthrene	85-01-8	1	0.001	0.010	0.008	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	0.007	ug/L	J
Carbazole	86-74-8	1	0.001	0.010	0.003	ug/L	J
Fluoranthene	206-44-0	1	0.002	0.010	0.014	ug/L	
Pyrene	129-00-0	1	0.001	0.010	0.014	ug/L	
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	0.002	ug/L	J
Chrysene	218-01-9	1	0.0009	0.010	0.005	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.002	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	0.004	ug/L	J
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 52.2 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 40.7 %

Surrogate: Fluoranthene-d10

57-120 % 65.0 %



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MW-X-010100
22K0471-15 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 11/23/2022 01:00
Instrument: FID3 Analyst: AA Analyzed: 12/08/2022 12:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22K0471-15 D 01
Preparation Batch: BKK0731 Sample Size: 500 mL
Prepared: 11/28/2022 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	94.1	%	



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MW-X-010100
22K0471-15 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 11/23/2022 01:00
Instrument: ECD7 Analyst: RJL Analyzed: 12/18/2022 12:33

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKK0730 Prepared: 11/28/2022	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22K0471-15 B 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CKL0201 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-15 B 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CKL0199 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-15 B 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CKL0200 Cleaned: 17-Dec-2022	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22K0471-15 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	88.8	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	75.7	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	87.5	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	74.3	%



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MW-X-010100
22K0471-15 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 11/23/2022 01:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 03:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-15 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	0.202	ug/L	
Beryllium	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Chromium	7440-47-3	5	1.30	2.50	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	0.133	ug/L	
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-X-010100
22K0471-15 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 11/23/2022 01:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 03:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-15 K 01
Preparation Batch: BKL0194 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.65	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	0.0820	ug/L	J
Copper	7440-50-8	1	0.173	0.500	1.78	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	1.51	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	4.37	ug/L	J



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MW-X-010100
22K0471-15 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 11/23/2022 01:00
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 13:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-15 K
Preparation Batch: BKK0825 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	0.000219	mg/L	



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MW-X-010100
22K0471-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 11/23/2022 01:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 01:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-16 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.187	ug/L	J
Beryllium, Dissolved	7440-41-7	2	0.0342	0.400	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U

Instrument: ICPMS2 Analyst: SKD Analyzed: 12/20/2022 00:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-16 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chromium, Dissolved	7440-47-3	5	1.30	2.50	ND	ug/L	U



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MW-X-010100
22K0471-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 11/23/2022 01:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 12/13/2022 01:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22K0471-16 A 01
Preparation Batch: BKL0195 Sample Size: 25 mL
Prepared: 12/08/2022 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.50	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	0.0680	ug/L	J
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.342	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	1.46	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	3.82	ug/L	J



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MW-X-010100
22K0471-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 11/23/2022 01:00
Instrument: HYDRA Analyst: ML Analyzed: 12/01/2022 14:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22K0471-16 A
Preparation Batch: BKK0826 Sample Size: 20 mL
Prepared: 11/30/2022 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Trip Blank
22K0471-17 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/21/2022 13:15

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 12:19

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 22K0471-17 A

Preparation Batch: BKK0756

Sample Size: 10 mL

Prepared: 11/28/2022

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	1.18	ug/L	
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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Trip Blank
22K0471-17 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/21/2022 13:15

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 12:19

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Trip Blank
22K0471-17 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 11/21/2022 13:15

Instrument: NT2 Analyst: PKC

Analyzed: 11/28/2022 12:19

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	112	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	96.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	93.3	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	100	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 06-Jan-2023 18:12
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Trip Blank
22K0471-17 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 11/21/2022 13:15
Instrument: NT2 Analyst: PKC Analyzed: 11/28/2022 12:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22K0471-17 A
Preparation Batch: BKK0756 Sample Size: 10 mL
Prepared: 11/28/2022 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	93.3	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - NWTPHg

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0756-BLK1)		Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 11:59								
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.84		ug/L	5.00		96.7	80-120			
Surrogate: 4-Bromofluorobenzene	4.68		ug/L	5.00		93.6	80-120			
Blank (BKK0756-BLK2)		Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 11:59								
Chloromethane	ND	0.27	0.50	ug/L						U
Vinyl Chloride	ND	0.08	0.20	ug/L						U
Bromomethane	ND	0.74	1.00	ug/L						U
Chloroethane	ND	0.18	0.20	ug/L						U
Trichlorofluoromethane	ND	0.13	0.20	ug/L						U
Acrolein	ND	2.70	5.00	ug/L						U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.11	0.20	ug/L						U
Acetone	ND	4.33	5.00	ug/L						U
1,1-Dichloroethene	ND	0.08	0.20	ug/L						U
Iodomethane	ND	0.43	1.00	ug/L						U
Methylene Chloride	ND	0.53	1.00	ug/L						U
Acrylonitrile	ND	0.40	1.00	ug/L						U
Carbon Disulfide	ND	0.12	0.20	ug/L						U
trans-1,2-Dichloroethene	ND	0.07	0.20	ug/L						U
Vinyl Acetate	ND	0.12	0.20	ug/L						U
1,1-Dichloroethane	ND	0.09	0.20	ug/L						U
2-Butanone	ND	1.77	5.00	ug/L						U
2,2-Dichloropropane	ND	0.11	0.20	ug/L						U
cis-1,2-Dichloroethene	ND	0.08	0.20	ug/L						U
Chloroform	ND	0.05	0.20	ug/L						U
Bromochloromethane	ND	0.09	0.20	ug/L						U
1,1,1-Trichloroethane	ND	0.08	0.20	ug/L						U
1,1-Dichloropropene	ND	0.09	0.20	ug/L						U
Carbon tetrachloride	ND	0.09	0.20	ug/L						U
1,2-Dichloroethane	ND	0.08	0.20	ug/L						U
Benzene	ND	0.05	0.20	ug/L						U
Trichloroethene	ND	0.07	0.20	ug/L						U
1,2-Dichloropropane	ND	0.07	0.20	ug/L						U
Bromodichloromethane	ND	0.09	0.20	ug/L						U
Dibromomethane	ND	0.06	0.20	ug/L						U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - EPA 8260D

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0756-BLK2)						Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 11:59					
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	1.90	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U
Toluene	ND	0.05	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U
2-Hexanone	ND	2.06	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.10	0.20	ug/L							U
1,3-Dichloropropane	ND	0.07	0.20	ug/L							U
Tetrachloroethene	ND	0.09	0.20	ug/L							U
Dibromochloromethane	ND	0.09	0.20	ug/L							U
1,2-Dibromoethane	ND	0.09	0.20	ug/L							U
Chlorobenzene	ND	0.06	0.20	ug/L							U
Ethylbenzene	ND	0.05	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.09	0.20	ug/L							U
m,p-Xylene	ND	0.14	0.40	ug/L							U
o-Xylene	ND	0.08	0.20	ug/L							U
Xylenes, total	ND	0.22	0.60	ug/L							U
Styrene	ND	0.09	0.20	ug/L							U
Bromoform	ND	0.15	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.10	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.16	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	0.60	1.00	ug/L							U
n-Propylbenzene	ND	0.07	0.20	ug/L							U
Bromobenzene	ND	0.07	0.20	ug/L							U
Isopropyl Benzene	ND	0.07	0.20	ug/L							U
2-Chlorotoluene	ND	0.06	0.20	ug/L							U
4-Chlorotoluene	ND	0.06	0.20	ug/L							U
t-Butylbenzene	ND	0.07	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.07	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.10	0.20	ug/L							U
s-Butylbenzene	ND	0.06	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.08	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.10	0.20	ug/L							U
n-Butylbenzene	ND	0.18	0.20	ug/L							U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - EPA 8260D

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0756-BLK2)											
						Prepared: 28-Nov-2022	Analyzed: 28-Nov-2022 11:59				
1,2-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.39	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.21	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	1.00	2.00	ug/L							U
Naphthalene	ND	0.27	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.25	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.13	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.14	0.50	ug/L							U
2-Pentanone	ND	2.34	5.00	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.32			ug/L	5.00		106	80-129			
<i>Surrogate: Toluene-d8</i>	4.84			ug/L	5.00		96.7	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.68			ug/L	5.00		93.6	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.00			ug/L	5.00		100	80-120			
LCS (BKK0756-BS1)											
						Prepared: 28-Nov-2022	Analyzed: 28-Nov-2022 09:55				
Gasoline Range Organics (Tol-Nap)	977		100	ug/L	1000		97.7	72-128			
<i>Surrogate: Toluene-d8</i>	4.95			ug/L	5.00		98.9	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.92			ug/L	5.00		98.4	80-120			
LCS (BKK0756-BS2)											
						Prepared: 28-Nov-2022	Analyzed: 28-Nov-2022 10:16				
Chloromethane	9.34	0.27	0.50	ug/L	10.0		93.4	60-138			
Vinyl Chloride	10.0	0.08	0.20	ug/L	10.0		100	66-133			
Bromomethane	10.5	0.74	1.00	ug/L	10.0		105	72-131			
Chloroethane	9.63	0.18	0.20	ug/L	10.0		96.3	60-155			
Trichlorofluoromethane	11.5	0.13	0.20	ug/L	10.0		115	62-141			
Acrolein	47.9	2.70	5.00	ug/L	50.0		95.8	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.9	0.11	0.20	ug/L	10.0		109	76-129			
Acetone	47.2	4.33	5.00	ug/L	50.0		94.5	58-142			
1,1-Dichloroethene	10.7	0.08	0.20	ug/L	10.0		107	69-135			
Iodomethane	11.4	0.43	1.00	ug/L	10.0		114	56-147			
Methylene Chloride	10.4	0.53	1.00	ug/L	10.0		104	65-135			
Acrylonitrile	9.35	0.40	1.00	ug/L	10.0		93.5	64-134			
Carbon Disulfide	11.0	0.12	0.20	ug/L	10.0		110	78-125			
trans-1,2-Dichloroethene	9.97	0.07	0.20	ug/L	10.0		99.7	78-128			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - EPA 8260D

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKK0756-BS2)						Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 10:16					
Vinyl Acetate	8.60	0.12	0.20	ug/L	10.0		86.0	55-138			
1,1-Dichloroethane	9.85	0.09	0.20	ug/L	10.0		98.5	76-124			
2-Butanone	48.2	1.77	5.00	ug/L	50.0		96.3	61-140			
2,2-Dichloropropane	10.0	0.11	0.20	ug/L	10.0		100	66-147			
cis-1,2-Dichloroethene	9.85	0.08	0.20	ug/L	10.0		98.5	80-121			
Chloroform	10.2	0.05	0.20	ug/L	10.0		102	80-122			
Bromochloromethane	9.72	0.09	0.20	ug/L	10.0		97.2	80-121			
1,1,1-Trichloroethane	9.87	0.08	0.20	ug/L	10.0		98.7	79-123			
1,1-Dichloropropene	9.56	0.09	0.20	ug/L	10.0		95.6	80-127			
Carbon tetrachloride	9.02	0.09	0.20	ug/L	10.0		90.2	53-137			
1,2-Dichloroethane	9.41	0.08	0.20	ug/L	10.0		94.1	75-123			
Benzene	9.87	0.05	0.20	ug/L	10.0		98.7	80-120			
Trichloroethene	9.88	0.07	0.20	ug/L	10.0		98.8	80-120			
1,2-Dichloropropane	9.48	0.07	0.20	ug/L	10.0		94.8	80-120			
Bromodichloromethane	9.37	0.09	0.20	ug/L	10.0		93.7	80-121			
Dibromomethane	9.41	0.06	0.20	ug/L	10.0		94.1	80-120			
2-Chloroethyl vinyl ether	7.42	0.55	1.00	ug/L	10.0		74.2	64-120			Q
4-Methyl-2-Pentanone	48.1	1.90	5.00	ug/L	50.0		96.2	67-133			
cis-1,3-Dichloropropene	9.63	0.09	0.20	ug/L	10.0		96.3	80-124			
Toluene	9.98	0.05	0.20	ug/L	10.0		99.8	80-120			
trans-1,3-Dichloropropene	9.62	0.09	0.20	ug/L	10.0		96.2	71-127			
2-Hexanone	45.5	2.06	5.00	ug/L	50.0		91.0	69-133			
1,1,2-Trichloroethane	9.63	0.10	0.20	ug/L	10.0		96.3	80-121			
1,3-Dichloropropane	9.29	0.07	0.20	ug/L	10.0		92.9	80-120			
Tetrachloroethene	9.96	0.09	0.20	ug/L	10.0		99.6	80-120			
Dibromochloromethane	9.33	0.09	0.20	ug/L	10.0		93.3	65-135			
1,2-Dibromoethane	9.69	0.09	0.20	ug/L	10.0		96.9	80-121			
Chlorobenzene	9.87	0.06	0.20	ug/L	10.0		98.7	80-120			
Ethylbenzene	9.70	0.05	0.20	ug/L	10.0		97.0	80-120			
1,1,1,2-Tetrachloroethane	9.35	0.09	0.20	ug/L	10.0		93.5	80-120			
m,p-Xylene	19.7	0.14	0.40	ug/L	20.0		98.7	80-121			
o-Xylene	9.59	0.08	0.20	ug/L	10.0		95.9	80-121			
Xylenes, total	29.3	0.22	0.60	ug/L	30.0		97.8	76-127			
Styrene	10.1	0.09	0.20	ug/L	10.0		101	80-124			
Bromoform	9.17	0.15	0.20	ug/L	10.0		91.7	51-134			



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - EPA 8260D

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKK0756-BS2)						Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 10:16					
1,1,2,2-Tetrachloroethane	9.26	0.10	0.20	ug/L	10.0		92.6	77-123			
1,2,3-Trichloropropane	9.24	0.16	0.50	ug/L	10.0		92.4	76-125			
trans-1,4-Dichloro 2-Butene	8.89	0.60	1.00	ug/L	10.0		88.9	55-129			
n-Propylbenzene	9.96	0.07	0.20	ug/L	10.0		99.6	78-130			
Bromobenzene	9.77	0.07	0.20	ug/L	10.0		97.7	80-120			
Isopropyl Benzene	9.82	0.07	0.20	ug/L	10.0		98.2	80-128			
2-Chlorotoluene	9.77	0.06	0.20	ug/L	10.0		97.7	78-122			
4-Chlorotoluene	9.99	0.06	0.20	ug/L	10.0		99.9	80-121			
t-Butylbenzene	9.51	0.07	0.20	ug/L	10.0		95.1	78-125			
1,3,5-Trimethylbenzene	10.1	0.07	0.20	ug/L	10.0		101	80-129			
1,2,4-Trimethylbenzene	9.98	0.10	0.20	ug/L	10.0		99.8	80-127			
s-Butylbenzene	9.71	0.06	0.20	ug/L	10.0		97.1	78-129			
4-Isopropyl Toluene	9.85	0.08	0.20	ug/L	10.0		98.5	79-130			
1,3-Dichlorobenzene	9.86	0.08	0.20	ug/L	10.0		98.6	80-120			
1,4-Dichlorobenzene	9.78	0.10	0.20	ug/L	10.0		97.8	80-120			
n-Butylbenzene	9.73	0.18	0.20	ug/L	10.0		97.3	74-129			
1,2-Dichlorobenzene	9.63	0.08	0.20	ug/L	10.0		96.3	80-120			
1,2-Dibromo-3-chloropropane	7.95	0.39	0.50	ug/L	10.0		79.5	62-123			Q
1,2,4-Trichlorobenzene	9.19	0.21	0.50	ug/L	10.0		91.9	64-124			
Hexachloro-1,3-Butadiene	9.30	1.00	2.00	ug/L	10.0		93.0	58-123			
Naphthalene	8.78	0.27	0.50	ug/L	10.0		87.8	50-134			
1,2,3-Trichlorobenzene	9.07	0.25	0.50	ug/L	10.0		90.7	49-133			
Dichlorodifluoromethane	11.1	0.13	0.20	ug/L	10.0		111	48-147			
Methyl tert-butyl Ether	9.79	0.14	0.50	ug/L	10.0		97.9	71-132			
2-Pentanone	46.9	2.34	5.00	ug/L	50.0		93.7	69-134			
Surrogate: 1,2-Dichloroethane-d4	5.26			ug/L	5.00		105	80-129			
Surrogate: Toluene-d8	4.99			ug/L	5.00		99.7	80-120			
Surrogate: 4-Bromofluorobenzene	4.91			ug/L	5.00		98.1	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.99			ug/L	5.00		99.8	80-120			
LCS Dup (BKK0756-BS2)						Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 10:37					
Gasoline Range Organics (Tol-Nap)	945		100	ug/L	1000		94.5	72-128	3.39	30	
Surrogate: Toluene-d8	4.97			ug/L	5.00		99.4	80-120			
Surrogate: 4-Bromofluorobenzene	4.94			ug/L	5.00		98.7	80-120			



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - EPA 8260D

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKK0756-BSD2)						Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 10:57					
Chloromethane	9.14	0.27	0.50	ug/L	10.0	91.4	60-138	2.18	30		
Vinyl Chloride	10.1	0.08	0.20	ug/L	10.0	101	66-133	1.24	30		
Bromomethane	10.8	0.74	1.00	ug/L	10.0	108	72-131	3.03	30		
Chloroethane	9.25	0.18	0.20	ug/L	10.0	92.5	60-155	3.97	30		
Trichlorofluoromethane	11.1	0.13	0.20	ug/L	10.0	111	62-141	3.21	30		
Acrolein	51.4	2.70	5.00	ug/L	50.0	103	52-190	7.13	30		
1,1,2-Trichloro-1,2,2-Trifluoroethane	11.2	0.11	0.20	ug/L	10.0	112	76-129	2.41	30		
Acetone	50.7	4.33	5.00	ug/L	50.0	101	58-142	7.00	30		
1,1-Dichloroethene	10.6	0.08	0.20	ug/L	10.0	106	69-135	1.07	30		
Iodomethane	11.7	0.43	1.00	ug/L	10.0	117	56-147	2.88	30		
Methylene Chloride	10.7	0.53	1.00	ug/L	10.0	107	65-135	2.82	30		
Acrylonitrile	9.90	0.40	1.00	ug/L	10.0	99.0	64-134	5.74	30		
Carbon Disulfide	11.4	0.12	0.20	ug/L	10.0	114	78-125	3.43	30		
trans-1,2-Dichloroethene	13.1	0.07	0.20	ug/L	10.0	131	78-128	27.20	30	*	
Vinyl Acetate	9.29	0.12	0.20	ug/L	10.0	92.9	55-138	7.77	30		
1,1-Dichloroethane	10.2	0.09	0.20	ug/L	10.0	102	76-124	3.42	30		
2-Butanone	50.9	1.77	5.00	ug/L	50.0	102	61-140	5.58	30		
2,2-Dichloropropane	9.88	0.11	0.20	ug/L	10.0	98.8	66-147	1.32	30		
cis-1,2-Dichloroethene	10.2	0.08	0.20	ug/L	10.0	102	80-121	3.51	30		
Chloroform	10.4	0.05	0.20	ug/L	10.0	104	80-122	2.53	30		
Bromochloromethane	10.2	0.09	0.20	ug/L	10.0	102	80-121	5.03	30		
1,1,1-Trichloroethane	10.1	0.08	0.20	ug/L	10.0	101	79-123	2.39	30		
1,1-Dichloropropene	9.79	0.09	0.20	ug/L	10.0	97.9	80-127	2.38	30		
Carbon tetrachloride	9.38	0.09	0.20	ug/L	10.0	93.8	53-137	3.95	30		
1,2-Dichloroethane	9.85	0.08	0.20	ug/L	10.0	98.5	75-123	4.55	30		
Benzene	10.2	0.05	0.20	ug/L	10.0	102	80-120	3.71	30		
Trichloroethene	9.97	0.07	0.20	ug/L	10.0	99.7	80-120	0.92	30		
1,2-Dichloropropane	9.91	0.07	0.20	ug/L	10.0	99.1	80-120	4.43	30		
Bromodichloromethane	9.87	0.09	0.20	ug/L	10.0	98.7	80-121	5.26	30		
Dibromomethane	9.78	0.06	0.20	ug/L	10.0	97.8	80-120	3.89	30		
2-Chloroethyl vinyl ether	7.95	0.55	1.00	ug/L	10.0	79.5	64-120	6.90	30	Q	
4-Methyl-2-Pentanone	52.0	1.90	5.00	ug/L	50.0	104	67-133	7.79	30		
cis-1,3-Dichloropropene	9.97	0.09	0.20	ug/L	10.0	99.7	80-124	3.47	30		
Toluene	10.2	0.05	0.20	ug/L	10.0	102	80-120	2.02	30		
trans-1,3-Dichloropropene	9.96	0.09	0.20	ug/L	10.0	99.6	71-127	3.41	30		



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - EPA 8260D

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKK0756-BSD2)						Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 10:57					
2-Hexanone	49.3	2.06	5.00	ug/L	50.0		98.5	69-133	7.98	30	
1,1,2-Trichloroethane	10.2	0.10	0.20	ug/L	10.0		102	80-121	5.76	30	
1,3-Dichloropropane	9.87	0.07	0.20	ug/L	10.0		98.7	80-120	6.08	30	
Tetrachloroethene	10.5	0.09	0.20	ug/L	10.0		105	80-120	4.86	30	
Dibromochloromethane	9.89	0.09	0.20	ug/L	10.0		98.9	65-135	5.81	30	
1,2-Dibromoethane	10.1	0.09	0.20	ug/L	10.0		101	80-121	4.47	30	
Chlorobenzene	10.2	0.06	0.20	ug/L	10.0		102	80-120	3.56	30	
Ethylbenzene	10.2	0.05	0.20	ug/L	10.0		102	80-120	5.24	30	
1,1,1,2-Tetrachloroethane	9.82	0.09	0.20	ug/L	10.0		98.2	80-120	4.91	30	
m,p-Xylene	20.4	0.14	0.40	ug/L	20.0		102	80-121	3.21	30	
o-Xylene	9.93	0.08	0.20	ug/L	10.0		99.3	80-121	3.47	30	
Xylenes, total	30.3	0.22	0.60	ug/L	30.0		101	76-127	3.29	30	
Styrene	10.4	0.09	0.20	ug/L	10.0		104	80-124	2.34	30	
Bromoform	9.83	0.15	0.20	ug/L	10.0		98.3	51-134	6.99	30	
1,1,2,2-Tetrachloroethane	9.83	0.10	0.20	ug/L	10.0		98.3	77-123	5.96	30	
1,2,3-Trichloropropane	9.92	0.16	0.50	ug/L	10.0		99.2	76-125	7.11	30	
trans-1,4-Dichloro 2-Butene	9.23	0.60	1.00	ug/L	10.0		92.3	55-129	3.74	30	
n-Propylbenzene	10.2	0.07	0.20	ug/L	10.0		102	78-130	2.60	30	
Bromobenzene	10.1	0.07	0.20	ug/L	10.0		101	80-120	3.46	30	
Isopropyl Benzene	10.1	0.07	0.20	ug/L	10.0		101	80-128	3.16	30	
2-Chlorotoluene	10.1	0.06	0.20	ug/L	10.0		101	78-122	2.89	30	
4-Chlorotoluene	10.2	0.06	0.20	ug/L	10.0		102	80-121	2.39	30	
t-Butylbenzene	9.80	0.07	0.20	ug/L	10.0		98.0	78-125	3.03	30	
1,3,5-Trimethylbenzene	10.2	0.07	0.20	ug/L	10.0		102	80-129	1.24	30	
1,2,4-Trimethylbenzene	10.4	0.10	0.20	ug/L	10.0		104	80-127	4.16	30	
s-Butylbenzene	9.95	0.06	0.20	ug/L	10.0		99.5	78-129	2.48	30	
4-Isopropyl Toluene	10.1	0.08	0.20	ug/L	10.0		101	79-130	2.90	30	
1,3-Dichlorobenzene	10.3	0.08	0.20	ug/L	10.0		103	80-120	3.99	30	
1,4-Dichlorobenzene	10.1	0.10	0.20	ug/L	10.0		101	80-120	3.47	30	
n-Butylbenzene	9.94	0.18	0.20	ug/L	10.0		99.4	74-129	2.18	30	
1,2-Dichlorobenzene	10.1	0.08	0.20	ug/L	10.0		101	80-120	4.71	30	
1,2-Dibromo-3-chloropropane	8.78	0.39	0.50	ug/L	10.0		87.8	62-123	9.90	30	Q
1,2,4-Trichlorobenzene	9.57	0.21	0.50	ug/L	10.0		95.7	64-124	4.04	30	
Hexachloro-1,3-Butadiene	9.15	1.00	2.00	ug/L	10.0		91.5	58-123	1.62	30	
Naphthalene	9.39	0.27	0.50	ug/L	10.0		93.9	50-134	6.71	30	



Aspect Consulting, LLC.
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Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - EPA 8260D

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKK0756-BSD2)						Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 10:57					
1,2,3-Trichlorobenzene	9.36	0.25	0.50	ug/L	10.0		93.6	49-133	3.08	30	
Dichlorodifluoromethane	10.9	0.13	0.20	ug/L	10.0		109	48-147	1.48	30	
Methyl tert-butyl Ether	10.3	0.14	0.50	ug/L	10.0		103	71-132	4.87	30	
2-Pentanone	49.4	2.34	5.00	ug/L	50.0		98.8	69-134	5.22	30	
Surrogate: 1,2-Dichloroethane-d4	5.14			ug/L	5.00		103	80-129			
Surrogate: Toluene-d8	5.04			ug/L	5.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	4.91			ug/L	5.00		98.2	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	4.95			ug/L	5.00		99.0	80-120			

Matrix Spike (BKK0756-MS1)			Source: 22K0471-03			Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 16:46				
Gasoline Range Organics (Tol-Nap)	856		100	ug/L	1000	ND	85.6	72-128		
Surrogate: Toluene-d8	4.99			ug/L	5.00	4.83	99.8	80-120		
Surrogate: 4-Bromofluorobenzene	4.90			ug/L	5.00	4.64	97.9	80-120		

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BKK0756-MS2)			Source: 22K0471-03			Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 17:28				
Chloromethane	9.25	0.27	0.50	ug/L	10.0	ND	92.5	60-138		
Vinyl Chloride	9.27	0.08	0.20	ug/L	10.0	ND	92.7	66-133		
Bromomethane	10.7	0.74	1.00	ug/L	10.0	ND	107	72-131		
Chloroethane	9.23	0.18	0.20	ug/L	10.0	ND	92.3	60-155		
Trichlorofluoromethane	12.6	0.13	0.20	ug/L	10.0	ND	126	62-141		
Acrolein	48.5	2.70	5.00	ug/L	50.0	ND	97.0	52-190		
1,1,2-Trichloro-1,2,2-Trifluoroethane	10.6	0.11	0.20	ug/L	10.0	ND	106	76-129		
Acetone	50.6	4.33	5.00	ug/L	50.0	ND	101	58-142		
1,1-Dichloroethene	10.7	0.08	0.20	ug/L	10.0	ND	107	69-135		
Iodomethane	11.3	0.43	1.00	ug/L	10.0	ND	113	56-147		
Methylene Chloride	13.1	0.53	1.00	ug/L	10.0	3.53	95.6	65-135		
Acrylonitrile	9.29	0.40	1.00	ug/L	10.0	ND	92.9	64-134		
Carbon Disulfide	10.9	0.12	0.20	ug/L	10.0	ND	109	78-125		
trans-1,2-Dichloroethene	9.70	0.07	0.20	ug/L	10.0	ND	97.0	78-128		
Vinyl Acetate	8.12	0.12	0.20	ug/L	10.0	ND	81.2	55-138		
1,1-Dichloroethane	9.82	0.09	0.20	ug/L	10.0	ND	98.2	76-124		
2-Butanone	48.5	1.77	5.00	ug/L	50.0	ND	97.1	61-140		
2,2-Dichloropropane	9.58	0.11	0.20	ug/L	10.0	ND	95.8	66-147		



Aspect Consulting, LLC.
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - EPA 8260D

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKK0756-MS2)											
Source: 22K0471-03				Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 17:28							
cis-1,2-Dichloroethene	9.86	0.08	0.20	ug/L	10.0	ND	98.6	80-121			
Chloroform	10.2	0.05	0.20	ug/L	10.0	ND	102	80-122			
Bromochloromethane	9.85	0.09	0.20	ug/L	10.0	ND	98.5	80-121			
1,1,1-Trichloroethane	10.3	0.08	0.20	ug/L	10.0	ND	103	79-123			
1,1-Dichloropropene	9.62	0.09	0.20	ug/L	10.0	ND	96.2	80-127			
Carbon tetrachloride	9.54	0.09	0.20	ug/L	10.0	ND	95.4	53-137			
1,2-Dichloroethane	9.81	0.08	0.20	ug/L	10.0	ND	98.1	75-123			
Benzene	9.89	0.05	0.20	ug/L	10.0	ND	98.9	80-120			
Trichloroethene	9.59	0.07	0.20	ug/L	10.0	ND	95.9	80-120			
1,2-Dichloropropane	9.55	0.07	0.20	ug/L	10.0	ND	95.5	80-120			
Bromodichloromethane	9.75	0.09	0.20	ug/L	10.0	ND	97.5	80-121			
Dibromomethane	9.48	0.06	0.20	ug/L	10.0	ND	94.8	80-120			
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L	10.0	ND		64-120			*, U
4-Methyl-2-Pentanone	49.2	1.90	5.00	ug/L	50.0	ND	98.4	67-133			
cis-1,3-Dichloropropene	9.40	0.09	0.20	ug/L	10.0	ND	94.0	80-124			
Toluene	9.93	0.05	0.20	ug/L	10.0	ND	99.3	80-120			
trans-1,3-Dichloropropene	9.67	0.09	0.20	ug/L	10.0	ND	96.7	71-127			
2-Hexanone	47.5	2.06	5.00	ug/L	50.0	ND	95.0	69-133			
1,1,2-Trichloroethane	9.78	0.10	0.20	ug/L	10.0	ND	97.8	80-121			
1,3-Dichloropropane	9.47	0.07	0.20	ug/L	10.0	ND	94.7	80-120			
Tetrachloroethene	9.95	0.09	0.20	ug/L	10.0	ND	99.5	80-120			
Dibromochloromethane	9.66	0.09	0.20	ug/L	10.0	ND	96.6	65-135			
1,2-Dibromoethane	9.78	0.09	0.20	ug/L	10.0	ND	97.8	80-121			
Chlorobenzene	10.0	0.06	0.20	ug/L	10.0	ND	100	80-120			
Ethylbenzene	9.91	0.05	0.20	ug/L	10.0	ND	99.1	80-120			
1,1,1,2-Tetrachloroethane	9.73	0.09	0.20	ug/L	10.0	ND	97.3	80-120			
m,p-Xylene	20.1	0.14	0.40	ug/L	20.0	ND	101	80-121			
o-Xylene	9.73	0.08	0.20	ug/L	10.0	ND	97.3	80-121			
Xylenes, total	29.9	0.22	0.60	ug/L	30.0	ND	99.5	76-127			
Styrene	10.2	0.09	0.20	ug/L	10.0	ND	102	80-124			
Bromoform	9.52	0.15	0.20	ug/L	10.0	ND	95.2	51-134			
1,1,2,2-Tetrachloroethane	9.52	0.10	0.20	ug/L	10.0	ND	95.2	77-123			
1,2,3-Trichloropropane	9.99	0.16	0.50	ug/L	10.0	ND	99.9	76-125			
trans-1,4-Dichloro 2-Butene	9.24	0.60	1.00	ug/L	10.0	ND	92.4	55-129			
n-Propylbenzene	10.3	0.07	0.20	ug/L	10.0	ND	103	78-130			



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Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - EPA 8260D

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKK0756-MS2)		Source: 22K0471-03			Prepared: 28-Nov-2022		Analyzed: 28-Nov-2022 17:28				
Bromobenzene	10.2	0.07	0.20	ug/L	10.0	ND	102	80-120			
Isopropyl Benzene	10.1	0.07	0.20	ug/L	10.0	ND	101	80-128			
2-Chlorotoluene	10.0	0.06	0.20	ug/L	10.0	ND	100	78-122			
4-Chlorotoluene	10.1	0.06	0.20	ug/L	10.0	ND	101	80-121			
t-Butylbenzene	9.73	0.07	0.20	ug/L	10.0	ND	97.3	78-125			
1,3,5-Trimethylbenzene	10.4	0.07	0.20	ug/L	10.0	ND	104	80-129			
1,2,4-Trimethylbenzene	10.4	0.10	0.20	ug/L	10.0	ND	104	80-127			
s-Butylbenzene	9.81	0.06	0.20	ug/L	10.0	ND	98.1	78-129			
4-Isopropyl Toluene	10.0	0.08	0.20	ug/L	10.0	ND	100	79-130			
1,3-Dichlorobenzene	10.3	0.08	0.20	ug/L	10.0	ND	103	80-120			
1,4-Dichlorobenzene	10.2	0.10	0.20	ug/L	10.0	ND	102	80-120			
n-Butylbenzene	9.79	0.18	0.20	ug/L	10.0	ND	97.9	74-129			
1,2-Dichlorobenzene	10.0	0.08	0.20	ug/L	10.0	ND	100	80-120			
1,2-Dibromo-3-chloropropane	8.20	0.39	0.50	ug/L	10.0	ND	82.0	62-123			Q
1,2,4-Trichlorobenzene	9.54	0.21	0.50	ug/L	10.0	ND	95.4	64-124			
Hexachloro-1,3-Butadiene	9.03	1.00	2.00	ug/L	10.0	ND	90.3	58-123			
Naphthalene	9.15	0.27	0.50	ug/L	10.0	ND	91.5	50-134			
1,2,3-Trichlorobenzene	9.21	0.25	0.50	ug/L	10.0	ND	92.1	49-133			
Dichlorodifluoromethane	11.8	0.13	0.20	ug/L	10.0	ND	118	48-147			
Methyl tert-butyl Ether	10.0	0.14	0.50	ug/L	10.0	ND	100	71-132			
2-Pentanone	46.2	2.34	5.00	ug/L	50.0	ND	92.4	69-134			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.17			ug/L	5.00	5.33	103	80-129			
<i>Surrogate: Toluene-d8</i>	4.88			ug/L	5.00	4.83	97.7	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.83			ug/L	5.00	4.64	96.7	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.99			ug/L	5.00	5.03	99.9	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKK0756-MSD1)		Source: 22K0471-03			Prepared: 28-Nov-2022		Analyzed: 28-Nov-2022 17:07				
Gasoline Range Organics (Tol-Nap)	889		100	ug/L	1000	ND	88.9	72-128	3.80	30	
<i>Surrogate: Toluene-d8</i>	4.98			ug/L	5.00	4.83	99.7	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.94			ug/L	5.00	4.64	98.8	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKK0756-MSD2)		Source: 22K0471-03			Prepared: 28-Nov-2022		Analyzed: 28-Nov-2022 17:49				
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Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - EPA 8260D

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKK0756-MSD2)											
Source: 22K0471-03				Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 17:49							
Chloromethane	10.3	0.27	0.50	ug/L	10.0	ND	103	60-138	10.60	30	
Vinyl Chloride	10.2	0.08	0.20	ug/L	10.0	ND	102	66-133	9.35	30	
Bromomethane	11.2	0.74	1.00	ug/L	10.0	ND	112	72-131	4.75	30	
Chloroethane	10.3	0.18	0.20	ug/L	10.0	ND	103	60-155	11.00	30	
Trichlorofluoromethane	13.4	0.13	0.20	ug/L	10.0	ND	134	62-141	6.11	30	
Acrolein	52.6	2.70	5.00	ug/L	50.0	ND	105	52-190	8.01	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	12.1	0.11	0.20	ug/L	10.0	ND	121	76-129	13.40	30	
Acetone	58.0	4.33	5.00	ug/L	50.0	ND	116	58-142	13.50	30	
1,1-Dichloroethene	11.6	0.08	0.20	ug/L	10.0	ND	116	69-135	8.07	30	
Iodomethane	12.3	0.43	1.00	ug/L	10.0	ND	123	56-147	8.53	30	
Methylene Chloride	14.5	0.53	1.00	ug/L	10.0	3.53	110	65-135	10.10	30	
Acrylonitrile	10.8	0.40	1.00	ug/L	10.0	ND	108	64-134	15.20	30	
Carbon Disulfide	12.1	0.12	0.20	ug/L	10.0	ND	121	78-125	10.60	30	
trans-1,2-Dichloroethene	12.4	0.07	0.20	ug/L	10.0	ND	124	78-128	24.50	30	
Vinyl Acetate	8.94	0.12	0.20	ug/L	10.0	ND	89.4	55-138	9.55	30	
1,1-Dichloroethane	11.0	0.09	0.20	ug/L	10.0	ND	110	76-124	11.00	30	
2-Butanone	54.2	1.77	5.00	ug/L	50.0	ND	108	61-140	11.00	30	
2,2-Dichloropropane	10.5	0.11	0.20	ug/L	10.0	ND	105	66-147	9.04	30	
cis-1,2-Dichloroethene	10.9	0.08	0.20	ug/L	10.0	ND	109	80-121	10.30	30	
Chloroform	11.3	0.05	0.20	ug/L	10.0	ND	113	80-122	9.70	30	
Bromochloromethane	11.0	0.09	0.20	ug/L	10.0	ND	110	80-121	11.30	30	
1,1,1-Trichloroethane	11.2	0.08	0.20	ug/L	10.0	ND	112	79-123	9.05	30	
1,1-Dichloropropene	10.7	0.09	0.20	ug/L	10.0	ND	107	80-127	11.10	30	
Carbon tetrachloride	10.6	0.09	0.20	ug/L	10.0	ND	106	53-137	10.70	30	
1,2-Dichloroethane	10.7	0.08	0.20	ug/L	10.0	ND	107	75-123	8.90	30	
Benzene	11.0	0.05	0.20	ug/L	10.0	ND	110	80-120	10.80	30	
Trichloroethene	10.8	0.07	0.20	ug/L	10.0	ND	108	80-120	11.40	30	
1,2-Dichloropropane	10.5	0.07	0.20	ug/L	10.0	ND	105	80-120	8.99	30	
Bromodichloromethane	10.8	0.09	0.20	ug/L	10.0	ND	108	80-121	9.78	30	
Dibromomethane	10.6	0.06	0.20	ug/L	10.0	ND	106	80-120	11.60	30	
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L	10.0	ND		64-120			*, U
4-Methyl-2-Pentanone	55.0	1.90	5.00	ug/L	50.0	ND	110	67-133	11.20	30	
cis-1,3-Dichloropropene	10.6	0.09	0.20	ug/L	10.0	ND	106	80-124	11.50	30	
Toluene	10.9	0.05	0.20	ug/L	10.0	ND	109	80-120	9.68	30	
trans-1,3-Dichloropropene	10.6	0.09	0.20	ug/L	10.0	ND	106	71-127	9.05	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - EPA 8260D

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKK0756-MSD2)											
Source: 22K0471-03			Prepared: 28-Nov-2022 Analyzed: 28-Nov-2022 17:49								
2-Hexanone	53.1	2.06	5.00	ug/L	50.0	ND	106	69-133	11.20	30	
1,1,2-Trichloroethane	10.7	0.10	0.20	ug/L	10.0	ND	107	80-121	8.99	30	
1,3-Dichloropropane	10.7	0.07	0.20	ug/L	10.0	ND	107	80-120	12.30	30	
Tetrachloroethene	11.3	0.09	0.20	ug/L	10.0	ND	113	80-120	12.40	30	
Dibromochloromethane	10.7	0.09	0.20	ug/L	10.0	ND	107	65-135	10.10	30	
1,2-Dibromoethane	10.6	0.09	0.20	ug/L	10.0	ND	106	80-121	8.07	30	
Chlorobenzene	11.2	0.06	0.20	ug/L	10.0	ND	112	80-120	10.90	30	
Ethylbenzene	11.1	0.05	0.20	ug/L	10.0	ND	111	80-120	11.10	30	
1,1,1,2-Tetrachloroethane	11.0	0.09	0.20	ug/L	10.0	ND	110	80-120	12.40	30	
m,p-Xylene	22.5	0.14	0.40	ug/L	20.0	ND	112	80-121	11.10	30	
o-Xylene	10.9	0.08	0.20	ug/L	10.0	ND	109	80-121	10.90	30	
Xylenes, total	33.3	0.22	0.60	ug/L	30.0	ND	111	76-127	11.00	30	
Styrene	11.5	0.09	0.20	ug/L	10.0	ND	115	80-124	12.00	30	
Bromoform	10.7	0.15	0.20	ug/L	10.0	ND	107	51-134	11.80	30	
1,1,2,2-Tetrachloroethane	10.4	0.10	0.20	ug/L	10.0	ND	104	77-123	8.76	30	
1,2,3-Trichloropropane	11.0	0.16	0.50	ug/L	10.0	ND	110	76-125	9.42	30	
trans-1,4-Dichloro 2-Butene	10.0	0.60	1.00	ug/L	10.0	ND	100	55-129	8.07	30	
n-Propylbenzene	11.2	0.07	0.20	ug/L	10.0	ND	112	78-130	7.58	30	
Bromobenzene	11.0	0.07	0.20	ug/L	10.0	ND	110	80-120	8.33	30	
Isopropyl Benzene	11.0	0.07	0.20	ug/L	10.0	ND	110	80-128	8.11	30	
2-Chlorotoluene	10.9	0.06	0.20	ug/L	10.0	ND	109	78-122	8.66	30	
4-Chlorotoluene	11.3	0.06	0.20	ug/L	10.0	ND	113	80-121	11.10	30	
t-Butylbenzene	10.8	0.07	0.20	ug/L	10.0	ND	108	78-125	10.60	30	
1,3,5-Trimethylbenzene	11.3	0.07	0.20	ug/L	10.0	ND	113	80-129	8.85	30	
1,2,4-Trimethylbenzene	11.2	0.10	0.20	ug/L	10.0	ND	112	80-127	7.49	30	
s-Butylbenzene	10.9	0.06	0.20	ug/L	10.0	ND	109	78-129	10.10	30	
4-Isopropyl Toluene	11.1	0.08	0.20	ug/L	10.0	ND	111	79-130	10.00	30	
1,3-Dichlorobenzene	11.0	0.08	0.20	ug/L	10.0	ND	110	80-120	6.76	30	
1,4-Dichlorobenzene	11.1	0.10	0.20	ug/L	10.0	ND	111	80-120	8.48	30	
n-Butylbenzene	10.8	0.18	0.20	ug/L	10.0	ND	108	74-129	9.60	30	
1,2-Dichlorobenzene	10.9	0.08	0.20	ug/L	10.0	ND	109	80-120	8.27	30	
1,2-Dibromo-3-chloropropane	9.43	0.39	0.50	ug/L	10.0	ND	94.3	62-123	13.90	30	Q
1,2,4-Trichlorobenzene	10.4	0.21	0.50	ug/L	10.0	ND	104	64-124	8.60	30	
Hexachloro-1,3-Butadiene	10.1	1.00	2.00	ug/L	10.0	ND	101	58-123	11.60	30	
Naphthalene	9.99	0.27	0.50	ug/L	10.0	ND	99.9	50-134	8.83	30	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BKK0756 - EPA 8260D

Instrument: NT2 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKK0756-MSD2)		Source: 22K0471-03			Prepared: 28-Nov-2022		Analyzed: 28-Nov-2022 17:49				
1,2,3-Trichlorobenzene	10.2	0.25	0.50	ug/L	10.0	ND	102	49-133	10.00	30	
Dichlorodifluoromethane	12.4	0.13	0.20	ug/L	10.0	ND	124	48-147	5.22	30	
Methyl tert-butyl Ether	11.1	0.14	0.50	ug/L	10.0	ND	111	71-132	9.89	30	
2-Pentanone	51.7	2.34	5.00	ug/L	50.0	ND	103	69-134	11.30	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.26			ug/L	5.00	5.33	105	80-129			
<i>Surrogate: Toluene-d8</i>	4.89			ug/L	5.00	4.83	97.8	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.96			ug/L	5.00	4.64	99.1	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.92			ug/L	5.00	5.03	98.4	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Reported:
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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKK0694 - EPA 8270E

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0694-BLK1)						Prepared: 28-Nov-2022 Analyzed: 05-Jan-2023 19:46					
Phenol	ND	0.01	0.2	ug/L							U
bis(2-chloroethyl) ether	ND	0.03	0.2	ug/L							U
2-Chlorophenol	ND	0.03	0.2	ug/L							U
1,3-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,4-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,2-Dichlorobenzene	ND	0.03	0.2	ug/L							U
Benzyl Alcohol	ND	0.02	0.2	ug/L							U
2,2'-Oxybis(1-chloropropane)	ND	0.03	0.2	ug/L							U
2-Methylphenol	ND	0.03	0.2	ug/L							U
Hexachloroethane	ND	0.04	0.2	ug/L							U
N-Nitroso-di-n-Propylamine	ND	0.04	0.2	ug/L							U
4-Methylphenol	ND	0.03	0.2	ug/L							U
Nitrobenzene	ND	0.03	0.2	ug/L							U
Isophorone	ND	0.03	0.2	ug/L							U
2-Nitrophenol	ND	0.04	1.0	ug/L							U
2,4-Dimethylphenol	ND	0.3	1.0	ug/L							U
Bis(2-Chloroethoxy)methane	ND	0.03	0.2	ug/L							U
2,4-Dichlorophenol	ND	0.1	1.0	ug/L							U
1,2,4-Trichlorobenzene	ND	0.03	0.2	ug/L							U
Naphthalene	ND	0.03	0.2	ug/L							U
Benzoic acid	ND	0.1	2.0	ug/L							U
4-Chloroaniline	ND	0.04	1.0	ug/L							U
Hexachlorobutadiene	ND	0.04	0.2	ug/L							U
4-Chloro-3-Methylphenol	ND	0.1	1.0	ug/L							U
2-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Hexachlorocyclopentadiene	ND	0.1	1.0	ug/L							U
2,4,6-Trichlorophenol	ND	0.2	1.0	ug/L							U
2,4,5-Trichlorophenol	ND	0.1	1.0	ug/L							U
2-Chloronaphthalene	ND	0.03	0.2	ug/L							U
2-Nitroaniline	ND	0.2	1.0	ug/L							U
Acenaphthylene	ND	0.02	0.2	ug/L							U
Dimethylphthalate	ND	0.04	0.2	ug/L							U
2,6-Dinitrotoluene	ND	0.2	1.0	ug/L							U
Acenaphthene	ND	0.03	0.2	ug/L							U
3-Nitroaniline	ND	0.2	1.0	ug/L							U



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKK0694 - EPA 8270E

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0694-BLK1)						Prepared: 28-Nov-2022 Analyzed: 05-Jan-2023 19:46					
2,4-Dinitrophenol	ND	0.2	2.0	ug/L							U
Dibenzofuran	ND	0.02	0.2	ug/L							U
4-Nitrophenol	ND	0.06	1.0	ug/L							U
2,4-Dinitrotoluene	ND	0.1	1.0	ug/L							U
Fluorene	ND	0.02	0.2	ug/L							U
4-Chlorophenylphenyl ether	ND	0.02	0.2	ug/L							U
Diethyl phthalate	ND	0.06	0.2	ug/L							U
4-Nitroaniline	ND	0.2	1.0	ug/L							U
4,6-Dinitro-2-methylphenol	ND	0.4	2.0	ug/L							U
N-Nitrosodiphenylamine	ND	0.03	0.2	ug/L							U
4-Bromophenyl phenyl ether	ND	0.02	0.2	ug/L							U
Hexachlorobenzene	ND	0.04	0.2	ug/L							U
Pentachlorophenol	ND	0.1	1.0	ug/L							U
Phenanthrene	ND	0.02	0.2	ug/L							U
Anthracene	ND	0.03	0.2	ug/L							U
Carbazole	ND	0.04	0.2	ug/L							U
Di-n-Butylphthalate	ND	0.05	0.2	ug/L							U
Fluoranthene	ND	0.03	0.2	ug/L							U
Pyrene	ND	0.03	0.2	ug/L							U
Butylbenzylphthalate	ND	0.07	0.2	ug/L							U
Benzo(a)anthracene	ND	0.04	0.2	ug/L							U
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L							U
Chrysene	ND	0.04	0.2	ug/L							U
bis(2-Ethylhexyl)phthalate	ND	0.2	0.2	ug/L							U
Di-n-Octylphthalate	ND	0.05	0.2	ug/L							U
Benzo(a)fluoranthene, Total	ND	0.08	0.4	ug/L							U
Benzo(a)pyrene	ND	0.05	0.2	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.06	0.2	ug/L							U
Dibenzo(a,h)anthracene	ND	0.07	0.2	ug/L							U
Benzo(g,h,i)perylene	ND	0.04	0.2	ug/L							U
1-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Surrogate: 2-Fluorophenol	2.70			ug/L	7.50	36.1		30-160			
Surrogate: Phenol-d5	1.75			ug/L	7.50	23.3		30-160			*
Surrogate: 2-Chlorophenol-d4	4.24			ug/L	7.50	56.6		30-160			



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Semivolatile Organic Compounds - Quality Control

Batch BKK0694 - EPA 8270E

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0694-BLK1)						Prepared: 28-Nov-2022 Analyzed: 05-Jan-2023 19:46					
Surrogate: 1,2-Dichlorobenzene-d4	1.46			ug/L	5.00	29.1		30-160			*
Surrogate: Nitrobenzene-d5	3.80			ug/L	5.00	76.0		30-160			
Surrogate: 2-Fluorobiphenyl	2.27			ug/L	5.00	45.5		30-160			
Surrogate: 2,4,6-Tribromophenol	4.97			ug/L	7.50	66.3		30-160			
Surrogate: p-Terphenyl-d14	5.20			ug/L	5.00	104		30-160			
LCS (BKK0694-BS1)						Prepared: 28-Nov-2022 Analyzed: 05-Jan-2023 20:22					
Phenol	1.8	0.01	0.2	ug/L	5.00	35.6		30-160			
bis(2-chloroethyl) ether	4.3	0.03	0.2	ug/L	5.00	86.9		30-160			Q
2-Chlorophenol	3.7	0.03	0.2	ug/L	5.00	73.3		30-160			
1,3-Dichlorobenzene	2.2	0.03	0.2	ug/L	5.00	44.6		30-160			Q
1,4-Dichlorobenzene	2.5	0.03	0.2	ug/L	5.00	50.6		30-160			Q
1,2-Dichlorobenzene	2.3	0.03	0.2	ug/L	5.00	45.2		30-160			
Benzyl Alcohol	3.1	0.02	0.2	ug/L	5.00	61.7		30-160			
2,2'-Oxybis(1-chloropropane)	4.0	0.03	0.2	ug/L	5.00	79.5		30-160			
2-Methylphenol	3.2	0.03	0.2	ug/L	5.00	64.9		30-160			
Hexachloroethane	2.2	0.04	0.2	ug/L	5.00	43.9		30-160			
N-Nitroso-di-n-Propylamine	5.0	0.04	0.2	ug/L	5.00	99.7		30-160			
4-Methylphenol	3.1	0.03	0.2	ug/L	5.00	62.2		30-160			
Nitrobenzene	4.5	0.03	0.2	ug/L	5.00	90.6		30-160			
Isophorone	7.3	0.03	0.2	ug/L	5.00	146		30-160			
2-Nitrophenol	4.1	0.04	1.0	ug/L	5.00	82.7		30-160			Q
2,4-Dimethylphenol	11.3	0.3	1.0	ug/L	13.0	86.9		30-160			
Bis(2-Chloroethoxy)methane	5.3	0.03	0.2	ug/L	5.00	106		30-160			
2,4-Dichlorophenol	13.5	0.1	1.0	ug/L	13.0	104		30-160			
1,2,4-Trichlorobenzene	2.5	0.03	0.2	ug/L	5.00	50.1		30-160			
Naphthalene	2.9	0.03	0.2	ug/L	5.00	58.2		30-160			
Benzoic acid	8.6	0.1	2.0	ug/L	23.0	37.3		30-160			Q
4-Chloroaniline	1.5	0.04	1.0	ug/L	13.0	11.6		30-160			*, Q
Hexachlorobutadiene	2.3	0.04	0.2	ug/L	5.00	45.4		30-160			
4-Chloro-3-Methylphenol	14.7	0.1	1.0	ug/L	13.0	113		30-160			
2-Methylnaphthalene	2.7	0.03	0.2	ug/L	5.00	53.2		30-160			
Hexachlorocyclopentadiene	4.1	0.1	1.0	ug/L	13.0	31.9		30-160			
2,4,6-Trichlorophenol	15.4	0.2	1.0	ug/L	13.0	118		30-160			
2,4,5-Trichlorophenol	13.8	0.1	1.0	ug/L	13.0	106		30-160			



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Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKK0694 - EPA 8270E

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKK0694-BS1)						Prepared: 28-Nov-2022 Analyzed: 05-Jan-2023 20:22					
2-Chloronaphthalene	3.0	0.03	0.2	ug/L	5.00		60.8	30-160			
2-Nitroaniline	19.4	0.2	1.0	ug/L	13.0		149	30-160			Q
Acenaphthylene	3.9	0.02	0.2	ug/L	5.00		77.6	30-160			
Dimethylphthalate	5.5	0.04	0.2	ug/L	5.00		110	30-160			
2,6-Dinitrotoluene	16.6	0.2	1.0	ug/L	13.0		128	30-160			Q
Acenaphthene	3.9	0.03	0.2	ug/L	5.00		78.0	30-160			
3-Nitroaniline	11.5	0.2	1.0	ug/L	13.0		88.2	30-160			Q
2,4-Dinitrophenol	15.9	0.2	2.0	ug/L	23.0		69.1	30-160			Q
Dibenzofuran	3.7	0.02	0.2	ug/L	5.00		74.4	30-160			
4-Nitrophenol	6.3	0.06	1.0	ug/L	13.0		48.6	30-160			
2,4-Dinitrotoluene	16.6	0.1	1.0	ug/L	13.0		128	30-160			
Fluorene	4.5	0.02	0.2	ug/L	5.00		89.4	30-160			
4-Chlorophenylphenyl ether	3.8	0.02	0.2	ug/L	5.00		75.8	30-160			
Diethyl phthalate	6.2	0.06	0.2	ug/L	5.00		125	30-160			
4-Nitroaniline	12.4	0.2	1.0	ug/L	13.0		95.1	30-160			
4,6-Dinitro-2-methylphenol	25.5	0.4	2.0	ug/L	23.0		111	30-160			
N-Nitrosodiphenylamine	4.9	0.03	0.2	ug/L	5.00		98.2	30-160			
4-Bromophenyl phenyl ether	4.0	0.02	0.2	ug/L	5.00		79.8	30-160			
Hexachlorobenzene	3.7	0.04	0.2	ug/L	5.00		73.6	30-160			
Pentachlorophenol	8.2	0.1	1.0	ug/L	13.0		63.1	30-160			Q
Phenanthrene	4.7	0.02	0.2	ug/L	5.00		94.2	30-160			
Anthracene	4.7	0.03	0.2	ug/L	5.00		93.8	30-160			
Carbazole	5.0	0.04	0.2	ug/L	5.00		100	30-160			
Di-n-Butylphthalate	6.0	0.05	0.2	ug/L	5.00		120	30-160			
Fluoranthene	6.2	0.03	0.2	ug/L	5.00		125	30-160			
Pyrene	6.0	0.03	0.2	ug/L	5.00		120	30-160			
Butylbenzylphthalate	7.3	0.07	0.2	ug/L	5.00		145	30-160			Q
Benzo(a)anthracene	5.9	0.04	0.2	ug/L	5.00		118	30-160			
3,3'-Dichlorobenzidine	12.9	0.3	1.0	ug/L	13.0		99.4	30-160			
Chrysene	6.0	0.04	0.2	ug/L	5.00		119	30-160			
bis(2-Ethylhexyl)phthalate	6.8	0.2	0.2	ug/L	5.00		136	30-160			Q
Di-n-Octylphthalate	5.5	0.05	0.2	ug/L	5.00		111	30-160			
Benzo(a)fluoranthene, Total	11.3	0.08	0.4	ug/L	10.0		113	30-160			
Benzo(a)pyrene	5.7	0.05	0.2	ug/L	5.00		115	30-160			
Indeno(1,2,3-cd)pyrene	5.7	0.06	0.2	ug/L	5.00		114	30-160			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKK0694 - EPA 8270E

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKK0694-BS1)						Prepared: 28-Nov-2022 Analyzed: 05-Jan-2023 20:22					
Dibenzo(a,h)anthracene	5.7	0.07	0.2	ug/L	5.00		114	30-160			
Benzo(g,h,i)perylene	5.6	0.04	0.2	ug/L	5.00		111	30-160			
1-Methylnaphthalene	2.8	0.03	0.2	ug/L	5.00		55.4	30-160			
Surrogate: 2-Fluorophenol	4.00			ug/L	7.50		53.4	30-160			
Surrogate: Phenol-d5	2.66			ug/L	7.50		35.5	30-160			
Surrogate: 2-Chlorophenol-d4	6.02			ug/L	7.50		80.2	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	2.06			ug/L	5.00		41.1	30-160			
Surrogate: Nitrobenzene-d5	4.57			ug/L	5.00		91.5	30-160			
Surrogate: 2-Fluorobiphenyl	3.21			ug/L	5.00		64.1	30-160			
Surrogate: 2,4,6-Tribromophenol	6.64			ug/L	7.50		88.5	30-160			
Surrogate: p-Terphenyl-d14	5.42			ug/L	5.00		108	30-160			
LCS Dup (BKK0694-BSD1)						Prepared: 28-Nov-2022 Analyzed: 05-Jan-2023 20:59					
Phenol	1.9	0.01	0.2	ug/L	5.00		38.6	30-160	8.01	30	
bis(2-chloroethyl) ether	4.4	0.03	0.2	ug/L	5.00		87.1	30-160	0.16	30	Q
2-Chlorophenol	3.7	0.03	0.2	ug/L	5.00		73.1	30-160	0.19	30	
1,3-Dichlorobenzene	2.3	0.03	0.2	ug/L	5.00		45.3	30-160	1.49	30	Q
1,4-Dichlorobenzene	2.3	0.03	0.2	ug/L	5.00		46.8	30-160	7.93	30	Q
1,2-Dichlorobenzene	2.4	0.03	0.2	ug/L	5.00		47.4	30-160	4.83	30	
Benzyl Alcohol	3.2	0.02	0.2	ug/L	5.00		64.5	30-160	4.36	30	
2,2'-Oxybis(1-chloropropane)	4.0	0.03	0.2	ug/L	5.00		80.0	30-160	0.71	30	
2-Methylphenol	3.2	0.03	0.2	ug/L	5.00		63.7	30-160	1.89	30	
Hexachloroethane	2.2	0.04	0.2	ug/L	5.00		44.5	30-160	1.46	30	
N-Nitroso-di-n-Propylamine	5.2	0.04	0.2	ug/L	5.00		103	30-160	3.51	30	
4-Methylphenol	3.1	0.03	0.2	ug/L	5.00		62.7	30-160	0.82	30	
Nitrobenzene	4.6	0.03	0.2	ug/L	5.00		92.8	30-160	2.44	30	
Isophorone	7.6	0.03	0.2	ug/L	5.00		151	30-160	3.65	30	
2-Nitrophenol	4.3	0.04	1.0	ug/L	5.00		85.7	30-160	3.56	30	Q
2,4-Dimethylphenol	12.3	0.3	1.0	ug/L	13.0		94.4	30-160	8.30	30	
Bis(2-Chloroethoxy)methane	5.3	0.03	0.2	ug/L	5.00		106	30-160	0.13	30	
2,4-Dichlorophenol	14.7	0.1	1.0	ug/L	13.0		113	30-160	8.47	30	
1,2,4-Trichlorobenzene	2.6	0.03	0.2	ug/L	5.00		52.7	30-160	5.05	30	
Naphthalene	3.1	0.03	0.2	ug/L	5.00		62.3	30-160	6.77	30	
Benzoic acid	10.8	0.1	2.0	ug/L	23.0		47.1	30-160	23.20	30	Q
4-Chloroaniline	1.4	0.04	1.0	ug/L	13.0		10.8	30-160	6.92	30	Q, *



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKK0694 - EPA 8270E

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKK0694-BSD1)						Prepared: 28-Nov-2022 Analyzed: 05-Jan-2023 20:59					
Hexachlorobutadiene	2.5	0.04	0.2	ug/L	5.00		49.2	30-160	8.07	30	
4-Chloro-3-Methylphenol	16.3	0.1	1.0	ug/L	13.0		125	30-160	9.99	30	
2-Methylnaphthalene	3.0	0.03	0.2	ug/L	5.00		59.9	30-160	11.90	30	
Hexachlorocyclopentadiene	5.0	0.1	1.0	ug/L	13.0		38.5	30-160	18.70	30	
2,4,6-Trichlorophenol	16.9	0.2	1.0	ug/L	13.0		130	30-160	9.56	30	
2,4,5-Trichlorophenol	15.1	0.1	1.0	ug/L	13.0		117	30-160	9.41	30	
2-Chloronaphthalene	3.2	0.03	0.2	ug/L	5.00		65.0	30-160	6.65	30	
2-Nitroaniline	21.4	0.2	1.0	ug/L	13.0		164	30-160	9.83	30	*, Q
Acenaphthylene	4.1	0.02	0.2	ug/L	5.00		82.6	30-160	6.23	30	
Dimethylphthalate	5.5	0.04	0.2	ug/L	5.00		110	30-160	0.35	30	
2,6-Dinitrotoluene	18.5	0.2	1.0	ug/L	13.0		142	30-160	10.60	30	Q
Acenaphthene	4.2	0.03	0.2	ug/L	5.00		83.5	30-160	6.77	30	
3-Nitroaniline	11.9	0.2	1.0	ug/L	13.0		91.7	30-160	3.93	30	Q
2,4-Dinitrophenol	19.6	0.2	2.0	ug/L	23.0		85.4	30-160	21.10	30	Q
Dibenzofuran	3.9	0.02	0.2	ug/L	5.00		77.3	30-160	3.72	30	
4-Nitrophenol	7.4	0.06	1.0	ug/L	13.0		57.3	30-160	16.50	30	
2,4-Dinitrotoluene	18.3	0.1	1.0	ug/L	13.0		140	30-160	9.45	30	
Fluorene	4.7	0.02	0.2	ug/L	5.00		94.2	30-160	5.22	30	
4-Chlorophenylphenyl ether	4.0	0.02	0.2	ug/L	5.00		80.9	30-160	6.60	30	
Diethyl phthalate	6.4	0.06	0.2	ug/L	5.00		128	30-160	2.40	30	
4-Nitroaniline	13.1	0.2	1.0	ug/L	13.0		101	30-160	5.63	30	
4,6-Dinitro-2-methylphenol	29.2	0.4	2.0	ug/L	23.0		127	30-160	13.50	30	
N-Nitrosodiphenylamine	5.0	0.03	0.2	ug/L	5.00		100	30-160	2.18	30	
4-Bromophenyl phenyl ether	4.3	0.02	0.2	ug/L	5.00		85.7	30-160	7.21	30	
Hexachlorobenzene	3.7	0.04	0.2	ug/L	5.00		73.6	30-160	0.04	30	
Pentachlorophenol	9.3	0.1	1.0	ug/L	13.0		71.4	30-160	12.40	30	Q
Phenanthrene	4.8	0.02	0.2	ug/L	5.00		96.9	30-160	2.77	30	
Anthracene	4.7	0.03	0.2	ug/L	5.00		93.4	30-160	0.34	30	
Carbazole	5.0	0.04	0.2	ug/L	5.00		99.6	30-160	0.84	30	
Di-n-Butylphthalate	5.9	0.05	0.2	ug/L	5.00		118	30-160	1.81	30	
Fluoranthene	6.3	0.03	0.2	ug/L	5.00		125	30-160	0.01	30	
Pyrene	6.0	0.03	0.2	ug/L	5.00		121	30-160	0.11	30	
Butylbenzylphthalate	7.3	0.07	0.2	ug/L	5.00		146	30-160	0.44	30	Q
Benzo(a)anthracene	5.9	0.04	0.2	ug/L	5.00		117	30-160	0.49	30	
3,3'-Dichlorobenzidine	12.8	0.3	1.0	ug/L	13.0		98.2	30-160	1.23	30	



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Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKK0694 - EPA 8270E

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKK0694-BSD1)											
						Prepared: 28-Nov-2022	Analyzed: 05-Jan-2023 20:59				
Chrysene	6.1	0.04	0.2	ug/L	5.00		122	30-160	2.07	30	
bis(2-Ethylhexyl)phthalate	6.9	0.2	0.2	ug/L	5.00		138	30-160	1.61	30	Q
Di-n-Octylphthalate	5.6	0.05	0.2	ug/L	5.00		112	30-160	0.83	30	
Benzo(a)fluoranthene, Total	11.2	0.08	0.4	ug/L	10.0		112	30-160	0.35	30	
Benzo(a)pyrene	5.6	0.05	0.2	ug/L	5.00		113	30-160	1.51	30	
Indeno(1,2,3-cd)pyrene	5.8	0.06	0.2	ug/L	5.00		117	30-160	2.78	30	
Dibenzo(a,h)anthracene	5.7	0.07	0.2	ug/L	5.00		114	30-160	0.32	30	
Benzo(g,h,i)perylene	5.7	0.04	0.2	ug/L	5.00		114	30-160	2.08	30	
1-Methylnaphthalene	3.1	0.03	0.2	ug/L	5.00		61.0	30-160	9.72	30	
<i>Surrogate: 2-Fluorophenol</i>	3.93			ug/L	7.50		52.5	30-160			
<i>Surrogate: Phenol-d5</i>	2.84			ug/L	7.50		37.9	30-160			
<i>Surrogate: 2-Chlorophenol-d4</i>	5.87			ug/L	7.50		78.3	30-160			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	2.05			ug/L	5.00		41.1	30-160			
<i>Surrogate: Nitrobenzene-d5</i>	4.52			ug/L	5.00		90.4	30-160			
<i>Surrogate: 2-Fluorobiphenyl</i>	3.16			ug/L	5.00		63.3	30-160			
<i>Surrogate: 2,4,6-Tribromophenol</i>	6.62			ug/L	7.50		88.2	30-160			
<i>Surrogate: p-Terphenyl-d14</i>	5.46			ug/L	5.00		109	30-160			
Matrix Spike (BKK0694-MS1)											
			Source: 22K0471-03			Prepared: 28-Nov-2022	Analyzed: 05-Jan-2023 23:24				
Phenol	1.5	0.01	0.2	ug/L	5.00	ND	30.3	30-160			
bis(2-chloroethyl) ether	3.9	0.03	0.2	ug/L	5.00	ND	78.6	30-160			Q
2-Chlorophenol	3.1	0.03	0.2	ug/L	5.00	ND	62.6	30-160			
1,3-Dichlorobenzene	2.5	0.03	0.2	ug/L	5.00	ND	50.3	30-160			Q
1,4-Dichlorobenzene	2.5	0.03	0.2	ug/L	5.00	ND	50.0	30-160			Q
1,2-Dichlorobenzene	2.5	0.03	0.2	ug/L	5.00	ND	50.8	30-160			
Benzyl Alcohol	2.2	0.02	0.2	ug/L	5.00	ND	43.6	30-160			
2,2'-Oxybis(1-chloropropane)	3.8	0.03	0.2	ug/L	5.00	ND	75.2	30-160			
2-Methylphenol	2.6	0.03	0.2	ug/L	5.00	ND	52.9	30-160			
Hexachloroethane	2.4	0.04	0.2	ug/L	5.00	ND	48.5	30-160			
N-Nitroso-di-n-Propylamine	4.1	0.04	0.2	ug/L	5.00	ND	81.4	30-160			
4-Methylphenol	2.6	0.03	0.2	ug/L	5.00	ND	51.8	30-160			
Nitrobenzene	4.2	0.03	0.2	ug/L	5.00	ND	83.6	30-160			
Isophorone	6.4	0.03	0.2	ug/L	5.00	ND	128	30-160			
2-Nitrophenol	3.7	0.04	1.0	ug/L	5.00	ND	74.7	30-160			Q
2,4-Dimethylphenol	11.8	0.3	1.0	ug/L	13.0	ND	90.8	30-160			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKK0694 - EPA 8270E

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKK0694-MS1)											
Source: 22K0471-03			Prepared: 28-Nov-2022			Analyzed: 05-Jan-2023 23:24					
Bis(2-Chloroethoxy)methane	4.6	0.03	0.2	ug/L	5.00	ND	91.8	30-160			
2,4-Dichlorophenol	11.9	0.1	1.0	ug/L	13.0	ND	91.7	30-160			
1,2,4-Trichlorobenzene	3.2	0.03	0.2	ug/L	5.00	ND	63.3	30-160			
Naphthalene	3.6	0.03	0.2	ug/L	5.00	ND	72.5	30-160			
Benzoic acid	10.3	0.1	2.0	ug/L	23.0	ND	44.8	30-160			Q
4-Chloroaniline	1.7	0.04	1.0	ug/L	13.0	ND	13.3	30-160			*, Q
Hexachlorobutadiene	2.6	0.04	0.2	ug/L	5.00	ND	51.7	30-160			
4-Chloro-3-Methylphenol	15.2	0.1	1.0	ug/L	13.0	ND	117	30-160			
2-Methylnaphthalene	3.5	0.03	0.2	ug/L	5.00	ND	69.3	30-160			
Hexachlorocyclopentadiene	5.3	0.1	1.0	ug/L	13.0	ND	40.7	30-160			
2,4,6-Trichlorophenol	15.3	0.2	1.0	ug/L	13.0	ND	117	30-160			
2,4,5-Trichlorophenol	13.7	0.1	1.0	ug/L	13.0	ND	106	30-160			
2-Chloronaphthalene	3.8	0.03	0.2	ug/L	5.00	ND	75.8	30-160			
2-Nitroaniline	19.5	0.2	1.0	ug/L	13.0	ND	150	30-160			Q
Acenaphthylene	4.3	0.02	0.2	ug/L	5.00	ND	85.1	30-160			
Dimethylphthalate	4.8	0.04	0.2	ug/L	5.00	ND	96.9	30-160			
2,6-Dinitrotoluene	16.8	0.2	1.0	ug/L	13.0	ND	129	30-160			Q
Acenaphthene	4.8	0.03	0.2	ug/L	5.00	0.2	91.4	30-160			
3-Nitroaniline	11.2	0.2	1.0	ug/L	13.0	ND	86.0	30-160			Q
2,4-Dinitrophenol	19.2	0.2	2.0	ug/L	23.0	ND	83.6	30-160			Q
Dibenzofuran	4.2	0.02	0.2	ug/L	5.00	ND	83.8	30-160			
4-Nitrophenol	6.7	0.06	1.0	ug/L	13.0	ND	51.9	30-160			
2,4-Dinitrotoluene	16.6	0.1	1.0	ug/L	13.0	ND	128	30-160			
Fluorene	4.9	0.02	0.2	ug/L	5.00	ND	97.8	30-160			
4-Chlorophenylphenyl ether	4.4	0.02	0.2	ug/L	5.00	ND	88.7	30-160			
Diethyl phthalate	5.2	0.06	0.2	ug/L	5.00	0.1	101	30-160			
4-Nitroaniline	12.8	0.2	1.0	ug/L	13.0	ND	98.1	30-160			
4,6-Dinitro-2-methylphenol	27.5	0.4	2.0	ug/L	23.0	ND	120	30-160			
N-Nitrosodiphenylamine	4.8	0.03	0.2	ug/L	5.00	ND	95.8	30-160			
4-Bromophenyl phenyl ether	4.7	0.02	0.2	ug/L	5.00	ND	95.0	30-160			
Hexachlorobenzene	4.3	0.04	0.2	ug/L	5.00	ND	86.1	30-160			
Pentachlorophenol	9.6	0.1	1.0	ug/L	13.0	ND	73.7	30-160			Q
Phenanthrene	4.9	0.02	0.2	ug/L	5.00	ND	98.3	30-160			
Anthracene	4.7	0.03	0.2	ug/L	5.00	ND	93.9	30-160			
Carbazole	4.9	0.04	0.2	ug/L	5.00	ND	97.7	30-160			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKK0694 - EPA 8270E

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKK0694-MS1)											
			Source: 22K0471-03			Prepared: 28-Nov-2022			Analyzed: 05-Jan-2023 23:24		
Di-n-Butylphthalate	5.8	0.05	0.2	ug/L	5.00	ND	116	30-160			
Fluoranthene	5.9	0.03	0.2	ug/L	5.00	ND	119	30-160			
Pyrene	5.8	0.03	0.2	ug/L	5.00	ND	116	30-160			
Butylbenzylphthalate	7.0	0.07	0.2	ug/L	5.00	ND	140	30-160			Q
Benzo(a)anthracene	5.6	0.04	0.2	ug/L	5.00	ND	111	30-160			
3,3'-Dichlorobenzidine	5.1	0.3	1.0	ug/L	13.0	ND	39.1	30-160			
Chrysene	5.8	0.04	0.2	ug/L	5.00	ND	116	30-160			
bis(2-Ethylhexyl)phthalate	6.5	0.2	0.2	ug/L	5.00	ND	130	30-160			Q
Di-n-Octylphthalate	5.2	0.05	0.2	ug/L	5.00	ND	105	30-160			
Benzo(a)pyrene	5.3	0.05	0.2	ug/L	5.00	ND	106	30-160			
Indeno(1,2,3-cd)pyrene	5.5	0.06	0.2	ug/L	5.00	ND	110	30-160			
Dibenzo(a,h)anthracene	5.4	0.07	0.2	ug/L	5.00	ND	107	30-160			
Benzo(g,h,i)perylene	5.4	0.04	0.2	ug/L	5.00	ND	109	30-160			
1-Methylnaphthalene	3.6	0.03	0.2	ug/L	5.00	ND	72.8	30-160			
<hr/>											
Surrogate: 2-Fluorophenol	3.47			ug/L	7.50	3.63	46.3	30-160			
Surrogate: Phenol-d5	2.43			ug/L	7.50	2.32	32.4	30-160			
Surrogate: 2-Chlorophenol-d4	5.41			ug/L	7.50	5.43	72.2	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	2.43			ug/L	5.00	2.02	48.5	30-160			
Surrogate: Nitrobenzene-d5	4.15			ug/L	5.00	4.70	82.9	30-160			
Surrogate: 2-Fluorobiphenyl	3.61			ug/L	5.00	3.11	72.2	30-160			
Surrogate: 2,4,6-Tribromophenol	6.07			ug/L	7.50	6.06	80.9	30-160			
Surrogate: p-Terphenyl-d14	5.30			ug/L	5.00	6.18	106	30-160			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKK0694-MSD1)											
			Source: 22K0471-03			Prepared: 28-Nov-2022			Analyzed: 06-Jan-2023 00:00		
Phenol	1.6	0.01	0.2	ug/L	5.00	ND	31.1	30-160	2.50	30	
bis(2-chloroethyl) ether	3.8	0.03	0.2	ug/L	5.00	ND	76.5	30-160	2.78	30	Q
2-Chlorophenol	3.3	0.03	0.2	ug/L	5.00	ND	65.3	30-160	4.19	30	
1,3-Dichlorobenzene	2.3	0.03	0.2	ug/L	5.00	ND	46.4	30-160	7.98	30	Q
1,4-Dichlorobenzene	2.0	0.03	0.2	ug/L	5.00	ND	40.0	30-160	22.20	30	Q
1,2-Dichlorobenzene	2.2	0.03	0.2	ug/L	5.00	ND	43.1	30-160	16.50	30	
Benzyl Alcohol	2.2	0.02	0.2	ug/L	5.00	ND	44.9	30-160	2.88	30	
2,2'-Oxybis(1-chloropropane)	3.6	0.03	0.2	ug/L	5.00	ND	72.5	30-160	3.64	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKK0694 - EPA 8270E

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKK0694-MSD1)											
Source: 22K0471-03			Prepared: 28-Nov-2022 Analyzed: 06-Jan-2023 00:00								
2-Methylphenol	3.0	0.03	0.2	ug/L	5.00	ND	59.5	30-160	11.80	30	
Hexachloroethane	2.1	0.04	0.2	ug/L	5.00	ND	42.6	30-160	12.90	30	
N-Nitroso-di-n-Propylamine	4.7	0.04	0.2	ug/L	5.00	ND	95.0	30-160	15.40	30	
4-Methylphenol	2.9	0.03	0.2	ug/L	5.00	ND	58.0	30-160	11.20	30	
Nitrobenzene	4.1	0.03	0.2	ug/L	5.00	ND	82.9	30-160	0.85	30	
Isophorone	6.7	0.03	0.2	ug/L	5.00	ND	134	30-160	4.52	30	
2-Nitrophenol	3.8	0.04	1.0	ug/L	5.00	ND	76.6	30-160	2.49	30	Q
2,4-Dimethylphenol	11.1	0.3	1.0	ug/L	13.0	ND	85.3	30-160	6.18	30	
Bis(2-Chloroethoxy)methane	4.7	0.03	0.2	ug/L	5.00	ND	94.5	30-160	2.87	30	
2,4-Dichlorophenol	11.8	0.1	1.0	ug/L	13.0	ND	91.1	30-160	0.68	30	
1,2,4-Trichlorobenzene	2.4	0.03	0.2	ug/L	5.00	ND	47.1	30-160	29.40	30	
Naphthalene	2.9	0.03	0.2	ug/L	5.00	ND	57.5	30-160	23.10	30	
Benzoic acid	8.7	0.1	2.0	ug/L	23.0	ND	38.0	30-160	16.60	30	Q
4-Chloroaniline	2.2	0.04	1.0	ug/L	13.0	ND	16.7	30-160	22.80	30	*, Q
Hexachlorobutadiene	2.0	0.04	0.2	ug/L	5.00	ND	39.9	30-160	25.70	30	
4-Chloro-3-Methylphenol	14.2	0.1	1.0	ug/L	13.0	ND	109	30-160	6.71	30	
2-Methylnaphthalene	2.7	0.03	0.2	ug/L	5.00	ND	53.8	30-160	25.10	30	
Hexachlorocyclopentadiene	4.6	0.1	1.0	ug/L	13.0	ND	35.3	30-160	14.20	30	
2,4,6-Trichlorophenol	14.7	0.2	1.0	ug/L	13.0	ND	113	30-160	3.87	30	
2,4,5-Trichlorophenol	12.9	0.1	1.0	ug/L	13.0	ND	99.2	30-160	6.23	30	
2-Chloronaphthalene	3.0	0.03	0.2	ug/L	5.00	ND	60.8	30-160	21.90	30	
2-Nitroaniline	20.5	0.2	1.0	ug/L	13.0	ND	158	30-160	5.32	30	Q
Acenaphthylene	4.0	0.02	0.2	ug/L	5.00	ND	79.2	30-160	7.16	30	
Dimethylphthalate	5.3	0.04	0.2	ug/L	5.00	ND	106	30-160	8.56	30	
2,6-Dinitrotoluene	17.5	0.2	1.0	ug/L	13.0	ND	135	30-160	4.35	30	Q
Acenaphthene	4.3	0.03	0.2	ug/L	5.00	0.2	81.8	30-160	10.50	30	
3-Nitroaniline	12.1	0.2	1.0	ug/L	13.0	ND	92.9	30-160	7.74	30	Q
2,4-Dinitrophenol	17.5	0.2	2.0	ug/L	23.0	ND	75.9	30-160	9.59	30	Q
Dibenzofuran	3.9	0.02	0.2	ug/L	5.00	ND	77.3	30-160	8.03	30	
4-Nitrophenol	6.4	0.06	1.0	ug/L	13.0	ND	49.5	30-160	4.83	30	
2,4-Dinitrotoluene	17.8	0.1	1.0	ug/L	13.0	ND	137	30-160	7.16	30	
Fluorene	4.8	0.02	0.2	ug/L	5.00	ND	95.1	30-160	2.86	30	
4-Chlorophenylphenyl ether	3.5	0.02	0.2	ug/L	5.00	ND	69.2	30-160	24.70	30	
Diethyl phthalate	6.3	0.06	0.2	ug/L	5.00	0.1	124	30-160	20.40	30	
4-Nitroaniline	13.8	0.2	1.0	ug/L	13.0	ND	106	30-160	7.59	30	



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Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKK0694 - EPA 8270E

Instrument: NT14 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKK0694-MSD1)											
Source: 22K0471-03			Prepared: 28-Nov-2022 Analyzed: 06-Jan-2023 00:00								
4,6-Dinitro-2-methylphenol	26.3	0.4	2.0	ug/L	23.0	ND	114	30-160	4.37	30	
N-Nitrosodiphenylamine	5.1	0.03	0.2	ug/L	5.00	ND	102	30-160	6.36	30	
4-Bromophenyl phenyl ether	4.4	0.02	0.2	ug/L	5.00	ND	88.8	30-160	6.66	30	
Hexachlorobenzene	4.1	0.04	0.2	ug/L	5.00	ND	82.9	30-160	3.82	30	
Pentachlorophenol	9.2	0.1	1.0	ug/L	13.0	ND	70.8	30-160	4.05	30	Q
Phenanthrene	5.1	0.02	0.2	ug/L	5.00	ND	102	30-160	3.55	30	
Anthracene	4.9	0.03	0.2	ug/L	5.00	ND	98.0	30-160	4.30	30	
Carbazole	5.3	0.04	0.2	ug/L	5.00	ND	105	30-160	7.48	30	
Di-n-Butylphthalate	6.1	0.05	0.2	ug/L	5.00	ND	123	30-160	5.49	30	
Fluoranthene	6.3	0.03	0.2	ug/L	5.00	ND	126	30-160	5.72	30	
Pyrene	6.1	0.03	0.2	ug/L	5.00	ND	122	30-160	5.69	30	
Butylbenzylphthalate	7.4	0.07	0.2	ug/L	5.00	ND	149	30-160	6.17	30	Q
Benzo(a)anthracene	6.0	0.04	0.2	ug/L	5.00	ND	119	30-160	6.77	30	
3,3'-Dichlorobenzidine	6.8	0.3	1.0	ug/L	13.0	ND	52.3	30-160	28.80	30	
Chrysene	6.1	0.04	0.2	ug/L	5.00	ND	123	30-160	6.19	30	
bis(2-Ethylhexyl)phthalate	7.6	0.2	0.2	ug/L	5.00	ND	152	30-160	15.60	30	Q
Di-n-Octylphthalate	5.6	0.05	0.2	ug/L	5.00	ND	111	30-160	6.29	30	
Benzo(a)fluoranthene, Total	11.2	0.08	0.4	ug/L	10.0	ND	112	30-160	6.68	30	
Benzo(a)pyrene	5.7	0.05	0.2	ug/L	5.00	ND	114	30-160	7.15	30	
Indeno(1,2,3-cd)pyrene	5.8	0.06	0.2	ug/L	5.00	ND	117	30-160	5.49	30	
Dibenzo(a,h)anthracene	5.7	0.07	0.2	ug/L	5.00	ND	114	30-160	6.11	30	
Benzo(g,h,i)perylene	5.9	0.04	0.2	ug/L	5.00	ND	118	30-160	7.78	30	
1-Methylnaphthalene	2.8	0.03	0.2	ug/L	5.00	ND	56.1	30-160	25.90	30	
Surrogate: 2-Fluorophenol	3.45			ug/L	7.50	3.63	46.0	30-160			
Surrogate: Phenol-d5	2.46			ug/L	7.50	2.32	32.8	30-160			
Surrogate: 2-Chlorophenol-d4	5.11			ug/L	7.50	5.43	68.1	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	2.00			ug/L	5.00	2.02	39.9	30-160			
Surrogate: Nitrobenzene-d5	3.95			ug/L	5.00	4.70	79.1	30-160			
Surrogate: 2-Fluorobiphenyl	2.98			ug/L	5.00	3.11	59.6	30-160			
Surrogate: 2,4,6-Tribromophenol	6.33			ug/L	7.50	6.06	84.4	30-160			
Surrogate: p-Terphenyl-d14	6.07			ug/L	5.00	6.18	121	30-160			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKK0729 - EPA 8270E-SIM

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0729-BLK1)											
						Prepared: 28-Nov-2022 Analyzed: 22-Dec-2022 20:28					
Naphthalene	0.005	0.001	0.010	ug/L							J
2-Methylnaphthalene	0.001	0.001	0.010	ug/L							J
1-Methylnaphthalene	ND	0.0009	0.010	ug/L							U
Acenaphthylene	ND	0.002	0.010	ug/L							U
Acenaphthene	ND	0.003	0.010	ug/L							U
Dibenzofuran	ND	0.002	0.010	ug/L							U
Fluorene	ND	0.002	0.010	ug/L							U
Phenanthrene	0.001	0.001	0.010	ug/L							J
Anthracene	ND	0.001	0.010	ug/L							U
Carbazole	ND	0.001	0.010	ug/L							U
Fluoranthene	ND	0.002	0.010	ug/L							U
Pyrene	ND	0.001	0.010	ug/L							U
Benzo(a)anthracene	ND	0.0008	0.010	ug/L							U
Chrysene	ND	0.0009	0.010	ug/L							U
Benzo(b)fluoranthene	ND	0.0005	0.010	ug/L							U
Benzo(k)fluoranthene	ND	0.003	0.010	ug/L							U
Benzo(j)fluoranthene	ND	0.002	0.010	ug/L							U
Benzofluoranthenes, Total	ND	0.004	0.010	ug/L							U
Benzo(a)pyrene	ND	0.002	0.010	ug/L							U
Perylene	ND	0.006	0.010	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.001	0.010	ug/L							U
Dibenzo(a,h)anthracene	ND	0.001	0.010	ug/L							U
Benzo(g,h,i)perylene	ND	0.001	0.010	ug/L							U
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.192			ug/L	0.300		63.8	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.144			ug/L	0.300		48.1	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.224			ug/L	0.300		74.8	57-120			

LCS (BKK0729-BS1)											
						Prepared: 28-Nov-2022 Analyzed: 22-Dec-2022 21:00					
Naphthalene	0.239	0.001	0.010	ug/L	0.300		79.7	37-120			
2-Methylnaphthalene	0.240	0.001	0.010	ug/L	0.300		80.1	37-120			
1-Methylnaphthalene	0.256	0.0009	0.010	ug/L	0.300		85.3	29-120			
Acenaphthylene	0.249	0.002	0.010	ug/L	0.300		83.0	41-120			
Acenaphthene	0.248	0.003	0.010	ug/L	0.300		82.8	41-120			
Dibenzofuran	0.261	0.002	0.010	ug/L	0.300		87.0	38-120			
Fluorene	0.273	0.002	0.010	ug/L	0.300		90.9	43-120			



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Semivolatile Organic Compounds - SIM - Quality Control

Batch BKK0729 - EPA 8270E-SIM

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKK0729-BS1)					Prepared: 28-Nov-2022 Analyzed: 22-Dec-2022 21:00						
Phenanthrene	0.237	0.001	0.010	ug/L	0.300		78.9	41-120			
Anthracene	0.262	0.001	0.010	ug/L	0.300		87.3	40-120			Q
Carbazole	0.275	0.001	0.010	ug/L	0.300		91.6	30-160			
Fluoranthene	0.282	0.002	0.010	ug/L	0.300		94.0	45-120			
Pyrene	0.279	0.001	0.010	ug/L	0.300		93.1	41-120			
Benzo(a)anthracene	0.263	0.0008	0.010	ug/L	0.300		87.8	42-120			
Chrysene	0.275	0.0009	0.010	ug/L	0.300		91.7	44-120			
Benzo(b)fluoranthene	0.235	0.0005	0.010	ug/L	0.300		78.2	44-120			
Benzo(k)fluoranthene	0.279	0.003	0.010	ug/L	0.300		92.9	50-120			
Benzo(j)fluoranthene	0.296	0.002	0.010	ug/L	0.300		98.6	39-160			
Benzofluoranthenes, Total	0.809	0.004	0.010	ug/L	0.900		89.9	46-120			
Benzo(a)pyrene	0.205	0.002	0.010	ug/L	0.300		68.5	35-120			
Perylene	0.197	0.006	0.010	ug/L	0.300		65.7	30-160			
Indeno(1,2,3-cd)pyrene	0.231	0.001	0.010	ug/L	0.300		76.9	37-120			
Dibenzo(a,h)anthracene	0.226	0.001	0.010	ug/L	0.300		75.3	34-120			
Benzo(g,h,i)perylene	0.217	0.001	0.010	ug/L	0.300		72.3	38-120			
Surrogate: 2-Methylnaphthalene-d10	0.193			ug/L	0.300		64.3	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.151			ug/L	0.300		50.4	29-120			
Surrogate: Fluoranthene-d10	0.216			ug/L	0.300		72.0	57-120			
Matrix Spike (BKK0729-MS1)					Source: 22K0471-03 Prepared: 28-Nov-2022 Analyzed: 22-Dec-2022 22:36						
Naphthalene	0.244	0.001	0.010	ug/L	0.300	0.028	72.0	37-120			
2-Methylnaphthalene	0.247	0.001	0.010	ug/L	0.300	0.012	78.4	37-120			
1-Methylnaphthalene	0.262	0.0009	0.010	ug/L	0.300	0.010	83.9	29-120			
Acenaphthylene	0.270	0.002	0.010	ug/L	0.300	0.003	89.0	41-120			
Acenaphthene	0.468	0.003	0.010	ug/L	0.300	0.187	93.8	41-120			
Dibenzofuran	0.261	0.002	0.010	ug/L	0.300	0.002	86.5	38-120			
Fluorene	0.283	0.002	0.010	ug/L	0.300	0.008	91.9	43-120			
Phenanthrene	0.250	0.001	0.010	ug/L	0.300	0.033	72.3	41-120			
Anthracene	0.299	0.001	0.010	ug/L	0.300	0.010	96.1	40-120			Q
Carbazole	0.288	0.001	0.010	ug/L	0.300	0.002	95.2	30-160			
Fluoranthene	0.292	0.002	0.010	ug/L	0.300	0.016	92.1	45-120			
Pyrene	0.296	0.001	0.010	ug/L	0.300	0.020	92.0	41-120			
Benzo(a)anthracene	0.290	0.0008	0.010	ug/L	0.300	0.004	95.1	42-120			
Chrysene	0.282	0.0009	0.010	ug/L	0.300	0.006	92.2	44-120			



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Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKK0729 - EPA 8270E-SIM

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKK0729-MS1)											
Source: 22K0471-03			Prepared: 28-Nov-2022 Analyzed: 22-Dec-2022 22:36								
Benzo(b)fluoranthene	0.249	0.0005	0.010	ug/L	0.300	0.003	82.2	44-120			
Benzo(k)fluoranthene	0.279	0.003	0.010	ug/L	0.300	ND	93.1	50-120			
Benzo(j)fluoranthene	0.295	0.002	0.010	ug/L	0.300	0.003	97.6	39-160			
Benzofluoranthenes, Total	0.824	0.004	0.010	ug/L	0.900	0.008	90.7	46-120			
Benzo(a)pyrene	0.259	0.002	0.010	ug/L	0.300	0.004	85.0	35-120			
Perylene	0.264	0.006	0.010	ug/L	0.300	ND	88.0	30-160			
Indeno(1,2,3-cd)pyrene	0.235	0.001	0.010	ug/L	0.300	0.002	77.6	37-120			
Dibenzo(a,h)anthracene	0.231	0.001	0.010	ug/L	0.300	ND	76.9	34-120			
Benzo(g,h,i)perylene	0.219	0.001	0.010	ug/L	0.300	0.004	71.7	38-120			
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.186			ug/L	0.300	0.174	61.8	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.146			ug/L	0.300	0.135	48.7	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.219			ug/L	0.300	0.222	73.0	57-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKK0729-MSD1)											
Source: 22K0471-03			Prepared: 28-Nov-2022 Analyzed: 22-Dec-2022 23:07								
Naphthalene	0.239	0.001	0.010	ug/L	0.300	0.028	70.5	37-120	1.94	30	
2-Methylnaphthalene	0.244	0.001	0.010	ug/L	0.300	0.012	77.3	37-120	1.30	30	
1-Methylnaphthalene	0.257	0.0009	0.010	ug/L	0.300	0.010	82.2	29-120	1.98	30	
Acenaphthylene	0.262	0.002	0.010	ug/L	0.300	0.003	86.4	41-120	2.86	30	
Acenaphthene	0.440	0.003	0.010	ug/L	0.300	0.187	84.4	41-120	6.20	30	
Dibenzofuran	0.257	0.002	0.010	ug/L	0.300	0.002	85.1	38-120	1.63	30	
Fluorene	0.278	0.002	0.010	ug/L	0.300	0.008	90.2	43-120	1.76	30	
Phenanthrene	0.244	0.001	0.010	ug/L	0.300	0.033	70.3	41-120	2.43	30	
Anthracene	0.292	0.001	0.010	ug/L	0.300	0.010	93.7	40-120	2.42	30	Q
Carbazole	0.283	0.001	0.010	ug/L	0.300	0.002	93.6	30-160	1.78	30	
Fluoranthene	0.284	0.002	0.010	ug/L	0.300	0.016	89.3	45-120	2.85	30	
Pyrene	0.291	0.001	0.010	ug/L	0.300	0.020	90.3	41-120	1.76	30	
Benzo(a)anthracene	0.283	0.0008	0.010	ug/L	0.300	0.004	92.7	42-120	2.45	30	
Chrysene	0.274	0.0009	0.010	ug/L	0.300	0.006	89.3	44-120	3.16	30	
Benzo(b)fluoranthene	0.246	0.0005	0.010	ug/L	0.300	0.003	81.0	44-120	1.46	30	
Benzo(k)fluoranthene	0.268	0.003	0.010	ug/L	0.300	ND	89.4	50-120	4.03	30	
Benzo(j)fluoranthene	0.279	0.002	0.010	ug/L	0.300	0.003	92.2	39-160	5.65	30	
Benzofluoranthenes, Total	0.793	0.004	0.010	ug/L	0.900	0.008	87.3	46-120	3.82	30	
Benzo(a)pyrene	0.253	0.002	0.010	ug/L	0.300	0.004	82.8	35-120	2.56	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKK0729 - EPA 8270E-SIM

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BKK0729-MSD1)		Source: 22K0471-03		Prepared: 28-Nov-2022		Analyzed: 22-Dec-2022 23:07					
Perylene	0.256	0.006	0.010	ug/L	0.300	ND	85.5	30-160	2.86	30	
Indeno(1,2,3-cd)pyrene	0.228	0.001	0.010	ug/L	0.300	0.002	75.4	37-120	2.81	30	
Dibenzo(a,h)anthracene	0.223	0.001	0.010	ug/L	0.300	ND	74.3	34-120	3.42	30	
Benzo(g,h,i)perylene	0.216	0.001	0.010	ug/L	0.300	0.004	70.8	38-120	1.27	30	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.183			ug/L	0.300	0.174	61.1	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.142			ug/L	0.300	0.135	47.5	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.214			ug/L	0.300	0.222	71.3	57-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BKK0731 - NWTPH-Dx

Instrument: FID3 Analyst: AA

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0731-BLK1)		Prepared: 28-Nov-2022 Analyzed: 08-Dec-2022 07:26								
Diesel Range Organics (C12-C24)	ND	0.100	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L							U
<i>Surrogate: o-Terphenyl</i>	0.211		mg/L	0.225		93.9	50-150			
LCS (BKK0731-BS1)		Prepared: 28-Nov-2022 Analyzed: 08-Dec-2022 07:47								
Diesel Range Organics (C12-C24)	2.47	0.100	mg/L	3.00		82.3	56-120			
<i>Surrogate: o-Terphenyl</i>	0.195		mg/L	0.225		86.4	50-150			
LCS Dup (BKK0731-BSD1)		Prepared: 28-Nov-2022 Analyzed: 08-Dec-2022 08:08								
Diesel Range Organics (C12-C24)	2.43	0.100	mg/L	3.00		81.0	56-120	1.66	30	
<i>Surrogate: o-Terphenyl</i>	0.185		mg/L	0.225		82.1	50-150			
Matrix Spike (BKK0731-MS1)		Source: 22K0471-03		Prepared: 28-Nov-2022 Analyzed: 08-Dec-2022 09:11						
Diesel Range Organics (C12-C24)	2.81	0.100	mg/L	3.00	0.177	87.9	56-120			
<i>Surrogate: o-Terphenyl</i>	0.211		mg/L	0.225	0.203	93.9	50-150			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BKK0731-MSD1)		Source: 22K0471-03		Prepared: 28-Nov-2022 Analyzed: 08-Dec-2022 09:32						
Diesel Range Organics (C12-C24)	2.83	0.100	mg/L	3.00	0.177	88.4	56-120	0.60	30	
<i>Surrogate: o-Terphenyl</i>	0.208		mg/L	0.225	0.203	92.3	50-150			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BKK0730 - EPA 8082A

Instrument: ECD7 Analyst: RJL

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0730-BLK1)											
						Prepared: 25-Nov-2022 Analyzed: 18-Dec-2022 08:17					
Aroclor 1016	ND	0.002	0.010	ug/L							U
Aroclor 1221	ND	0.002	0.010	ug/L							U
Aroclor 1232	ND	0.002	0.010	ug/L							U
Aroclor 1242	ND	0.002	0.010	ug/L							U
Aroclor 1248	ND	0.002	0.010	ug/L							U
Aroclor 1254	ND	0.002	0.010	ug/L							U
Aroclor 1260	ND	0.003	0.010	ug/L							U
Aroclor 1262	ND	0.003	0.010	ug/L							U
Aroclor 1268	ND	0.003	0.010	ug/L							U
Surrogate: Decachlorobiphenyl	0.0161			ug/L	0.0200		80.3	29-120			
Surrogate: Tetrachlorometaxylene	0.0136			ug/L	0.0200		68.0	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0146			ug/L	0.0200		73.2	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0132			ug/L	0.0200		66.0	32-120			
LCS (BKK0730-BS1)											
						Prepared: 25-Nov-2022 Analyzed: 18-Dec-2022 08:39					
Aroclor 1016 [2C]	0.044	0.002	0.010	ug/L	0.0500		88.6	54-120			
Aroclor 1260	0.047	0.003	0.010	ug/L	0.0500		94.6	51-128			
Surrogate: Decachlorobiphenyl	0.0162			ug/L	0.0200		80.8	29-120			
Surrogate: Tetrachlorometaxylene	0.0139			ug/L	0.0200		69.7	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0148			ug/L	0.0200		74.2	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0135			ug/L	0.0200		67.5	32-120			
LCS Dup (BKK0730-BSD1)											
						Prepared: 25-Nov-2022 Analyzed: 18-Dec-2022 09:00					
Aroclor 1016 [2C]	0.040	0.002	0.010	ug/L	0.0500		80.0	54-120	10.20	30	
Aroclor 1260	0.046	0.003	0.010	ug/L	0.0500		91.3	51-128	3.58	30	
Surrogate: Decachlorobiphenyl	0.0145			ug/L	0.0200		72.4	29-120			
Surrogate: Tetrachlorometaxylene	0.0132			ug/L	0.0200		65.8	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0137			ug/L	0.0200		68.5	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0127			ug/L	0.0200		63.7	32-120			
Matrix Spike (BKK0730-MS1)											
			Source: 22K0471-03			Prepared: 25-Nov-2022 Analyzed: 18-Dec-2022 09:21					
Aroclor 1016	0.048	0.002	0.010	ug/L	0.0500	ND	96.0	54-120			
Aroclor 1260	0.047	0.003	0.010	ug/L	0.0500	ND	94.0	51-128			
Surrogate: Decachlorobiphenyl	0.0148			ug/L	0.0200		74.1	29-120			



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 06-Jan-2023 18:12
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Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BKK0730 - EPA 8082A

Instrument: ECD7 Analyst: RJL

QC Sample/Analyte	Detection Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BKK0730-MS1)		Source: 22K0471-03		Prepared: 25-Nov-2022		Analyzed: 18-Dec-2022 09:21				
Surrogate: Tetrachlorometaxylene	0.0148		ug/L	0.0200		73.9	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0135		ug/L	0.0200		67.4	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0142		ug/L	0.0200		71.1	32-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKK0730-MSD1)		Source: 22K0471-03		Prepared: 25-Nov-2022		Analyzed: 18-Dec-2022 09:43				
Aroclor 1016	0.049	0.002	0.010	ug/L	0.0500	ND	98.0	54-120	3.22	30
Aroclor 1260	0.050	0.003	0.010	ug/L	0.0500	ND	100.0	51-128	4.36	30
Surrogate: Decachlorobiphenyl	0.0156		ug/L	0.0200		78.0	29-120			
Surrogate: Tetrachlorometaxylene	0.0152		ug/L	0.0200		75.8	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0148		ug/L	0.0200		74.2	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0144		ug/L	0.0200		72.2	32-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 06-Jan-2023 18:12
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKK0825 - EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0825-BLK1)						Prepared: 30-Nov-2022 Analyzed: 01-Dec-2022 13:03					
Mercury	0.000080	0.000013	0.000100	mg/L							J
LCS (BKK0825-BS1)						Prepared: 30-Nov-2022 Analyzed: 01-Dec-2022 13:05					
Mercury	0.00206	0.000013	0.000100	mg/L	0.00200		103	80-120			
Duplicate (BKK0825-DUP1)						Source: 22K0471-03 Prepared: 30-Nov-2022 Analyzed: 01-Dec-2022 13:14					
Mercury	0.000088	0.000013	0.000100	mg/L		0.000094			5.83	20	J
Matrix Spike (BKK0825-MS1)						Source: 22K0471-03 Prepared: 30-Nov-2022 Analyzed: 01-Dec-2022 13:17					
Mercury	0.00102	0.000013	0.000100	mg/L	0.00100	0.000094	92.9	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BKK0825-MSD1)						Source: 22K0471-03 Prepared: 30-Nov-2022 Analyzed: 01-Dec-2022 13:19					
Mercury	0.00106	0.000013	0.000100	mg/L	0.00100	0.000094	96.7	75-125	3.72	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKL0194 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0194-BLK1)						Prepared: 08-Dec-2022 Analyzed: 12-Dec-2022 23:34						
Antimony	121	ND	0.101	0.200	ug/L							U
Chromium	52	ND	0.260	0.500	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Silver	107	ND	0.0220	0.200	ug/L							U
Thallium	205	ND	0.0234	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
Cadmium	111	ND	0.0300	0.100	ug/L							U
Cadmium	114	ND	0.0400	0.100	ug/L							U
Copper	63	ND	0.173	0.500	ug/L							U
Nickel	60	ND	0.0792	0.500	ug/L							U
Selenium	78	ND	0.179	0.500	ug/L							U
Zinc	66	ND	2.92	6.00	ug/L							U

LCS (BKL0194-BS1)						Prepared: 08-Dec-2022 Analyzed: 12-Dec-2022 23:39						
Antimony	121	25.1	0.101	0.200	ug/L	25.0		100	80-120			
Chromium	52	23.6	0.260	0.500	ug/L	25.0		94.5	80-120			
Lead	208	26.6	0.0513	0.100	ug/L	25.0		106	80-120			
Silver	107	25.8	0.0220	0.200	ug/L	25.0		103	80-120			
Thallium	205	25.8	0.0234	0.200	ug/L	25.0		103	80-120			
Arsenic	75a	25.2	0.0373	0.200	ug/L	25.0		101	80-120			
Cadmium	111	25.5	0.0300	0.100	ug/L	25.0		102	80-120			
Cadmium	114	26.1	0.0400	0.100	ug/L	25.0		104	80-120			
Copper	63	26.4	0.173	0.500	ug/L	25.0		106	80-120			
Nickel	60	25.7	0.0792	0.500	ug/L	25.0		103	80-120			
Selenium	78	84.4	0.179	0.500	ug/L	80.0		106	80-120			
Zinc	66	84.9	2.92	6.00	ug/L	80.0		106	80-120			

Duplicate (BKL0194-DUP1)						Source: 22K0471-03 Prepared: 08-Dec-2022 Analyzed: 13-Dec-2022 02:23						
Antimony	121	ND	0.101	0.200	ug/L	ND						U
Lead	208	0.0670	0.0513	0.100	ug/L	0.0690				2.94	20	J
Silver	107	ND	0.0220	0.200	ug/L	ND						U
Thallium	205	ND	0.0234	0.200	ug/L	ND						U
Arsenic	75a	0.203	0.0373	0.200	ug/L	0.207				1.95	20	
Cadmium	111	ND	0.0300	0.100	ug/L	ND						U
Copper	63	0.257	0.173	0.500	ug/L	0.248				3.56	20	J



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKL0194 - EPA 6020B UCT-KED

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BKL0194-DUP1)		Source: 22K0471-03			Prepared: 08-Dec-2022		Analyzed: 13-Dec-2022 02:23					
Nickel	60	0.164	0.0792	0.500	ug/L		0.169			3.00	20	J
Selenium	78	0.193	0.179	0.500	ug/L		ND					J
Zinc	66	ND	2.92	6.00	ug/L		ND					U

Duplicate (BKL0194-DUP2)		Source: 22K0471-03			Prepared: 08-Dec-2022		Analyzed: 16-Dec-2022 09:28					
Beryllium	9	ND	0.0342	0.400	ug/L		ND					U

Matrix Spike (BKL0194-MS1)		Source: 22K0471-03			Prepared: 08-Dec-2022		Analyzed: 13-Dec-2022 02:29					
Antimony	121	24.3	0.101	0.200	ug/L	25.0	ND	97.3	75-125			
Lead	208	22.3	0.0513	0.100	ug/L	25.0	0.0690	89.1	75-125			
Silver	107	21.8	0.0220	0.200	ug/L	25.0	ND	87.2	75-125			
Thallium	205	22.2	0.0234	0.200	ug/L	25.0	ND	88.9	75-125			
Arsenic	75a	24.4	0.0373	0.200	ug/L	25.0	0.207	96.8	75-125			
Cadmium	111	22.2	0.0300	0.100	ug/L	25.0	ND	88.6	75-125			
Copper	63	23.8	0.173	0.500	ug/L	25.0	0.248	94.1	75-125			
Nickel	60	24.7	0.0792	0.500	ug/L	25.0	0.169	98.2	75-125			
Selenium	78	73.6	0.179	0.500	ug/L	80.0	ND	92.0	75-125			
Zinc	66	69.9	2.92	6.00	ug/L	80.0	ND	87.3	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BKL0194-MS2)		Source: 22K0471-03			Prepared: 08-Dec-2022		Analyzed: 16-Dec-2022 09:33					
Beryllium	9	23.4	0.0342	0.400	ug/L	25.0	ND	93.4	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKL0194-MSD1)		Source: 22K0471-03			Prepared: 08-Dec-2022		Analyzed: 13-Dec-2022 02:35					
Antimony	121	23.6	0.101	0.200	ug/L	25.0	ND	94.5	75-125	2.92	20	
Lead	208	22.3	0.0513	0.100	ug/L	25.0	0.0690	88.9	75-125	0.18	20	
Silver	107	21.4	0.0220	0.200	ug/L	25.0	ND	85.4	75-125	2.02	20	
Thallium	205	22.3	0.0234	0.200	ug/L	25.0	ND	89.3	75-125	0.42	20	
Arsenic	75a	24.4	0.0373	0.200	ug/L	25.0	0.207	96.7	75-125	0.13	20	
Cadmium	111	21.8	0.0300	0.100	ug/L	25.0	ND	87.4	75-125	1.43	20	
Copper	63	23.6	0.173	0.500	ug/L	25.0	0.248	93.4	75-125	0.65	20	
Nickel	60	24.2	0.0792	0.500	ug/L	25.0	0.169	96.3	75-125	1.93	20	
Selenium	78	75.2	0.179	0.500	ug/L	80.0	ND	94.0	75-125	2.18	20	
Zinc	66	69.5	2.92	6.00	ug/L	80.0	ND	86.9	75-125	0.51	20	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 06-Jan-2023 18:12
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BKL0194 - EPA 6020B UCT-KED

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKL0194-MSD2)		Source: 22K0471-03		Prepared: 08-Dec-2022		Analyzed: 16-Dec-2022 09:39						
Beryllium	9	23.0	0.0342	0.400	ug/L	25.0	ND	92.0	75-125	1.58	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Blank (BKL0194-BLK2)		Prepared: 08-Dec-2022		Analyzed: 14-Dec-2022 20:57								
Beryllium	9	ND	0.0171	0.200	ug/L							U

LCS (BKL0194-BS2)		Prepared: 08-Dec-2022		Analyzed: 14-Dec-2022 21:02								
Beryllium	9	25.4	0.0171	0.200	ug/L	25.0		102	80-120			

Duplicate (BKL0194-DUP3)		Source: 22K0471-03		Prepared: 08-Dec-2022		Analyzed: 19-Dec-2022 23:29						
Chromium	52	ND	1.30	2.50	ug/L		ND					U

Matrix Spike (BKL0194-MS3)		Source: 22K0471-03		Prepared: 08-Dec-2022		Analyzed: 19-Dec-2022 23:34						
Chromium	52	23.3	1.30	2.50	ug/L	25.0	ND	93.4	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKL0194-MSD3)		Source: 22K0471-03		Prepared: 08-Dec-2022		Analyzed: 19-Dec-2022 23:39						
Chromium	52	23.8	1.30	2.50	ug/L	25.0	ND	95.0	75-125	1.76	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 06-Jan-2023 18:12
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKK0826 - EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKK0826-BLK1)						Prepared: 30-Nov-2022 Analyzed: 01-Dec-2022 13:42					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L							U
LCS (BKK0826-BS1)						Prepared: 30-Nov-2022 Analyzed: 01-Dec-2022 13:45					
Mercury, Dissolved	0.00194	0.000013	0.000100	mg/L	0.00200		97.0	80-120			
Duplicate (BKK0826-DUP1)						Source: 22K0471-04 Prepared: 30-Nov-2022 Analyzed: 01-Dec-2022 13:49					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L		ND					U
Matrix Spike (BKK0826-MS1)						Source: 22K0471-04 Prepared: 30-Nov-2022 Analyzed: 01-Dec-2022 13:52					
Mercury, Dissolved	0.00102	0.000013	0.000100	mg/L	0.00100	ND	102	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BKK0826-MSD1)						Source: 22K0471-04 Prepared: 30-Nov-2022 Analyzed: 01-Dec-2022 13:54					
Mercury, Dissolved	0.00108	0.000013	0.000100	mg/L	0.00100	ND	108	75-125	5.30	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKL0195 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0195-BLK1)						Prepared: 08-Dec-2022 Analyzed: 12-Dec-2022 23:44						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Chromium, Dissolved	52	ND	0.260	0.500	ug/L							U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L							U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L							U
Copper, Dissolved	63	ND	0.173	0.500	ug/L							U
Nickel, Dissolved	60	ND	0.0792	0.500	ug/L							U
Selenium, Dissolved	78	ND	0.179	0.500	ug/L							U
Zinc, Dissolved	66	ND	2.92	6.00	ug/L							U
LCS (BKL0195-BS1)						Prepared: 08-Dec-2022 Analyzed: 12-Dec-2022 23:49						
Antimony, Dissolved	121	25.7	0.101	0.200	ug/L	25.0		103	80-120			
Chromium, Dissolved	52	23.8	0.260	0.500	ug/L	25.0		95.4	80-120			
Lead, Dissolved	208	26.8	0.0513	0.100	ug/L	25.0		107	80-120			
Silver, Dissolved	107	25.7	0.0220	0.200	ug/L	25.0		103	80-120			
Thallium, Dissolved	205	26.2	0.0234	0.200	ug/L	25.0		105	80-120			
Arsenic, Dissolved	75a	24.7	0.0373	0.200	ug/L	25.0		99.0	80-120			
Cadmium, Dissolved	111	24.9	0.0300	0.100	ug/L	25.0		99.5	80-120			
Copper, Dissolved	63	25.8	0.173	0.500	ug/L	25.0		103	80-120			
Nickel, Dissolved	60	25.4	0.0792	0.500	ug/L	25.0		102	80-120			
Selenium, Dissolved	78	80.3	0.179	0.500	ug/L	80.0		100	80-120			
Zinc, Dissolved	66	81.8	2.92	6.00	ug/L	80.0		102	80-120			
Duplicate (BKL0195-DUP1)						Source: 22K0471-04 Prepared: 08-Dec-2022 Analyzed: 13-Dec-2022 01:05						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L		ND					U
Lead, Dissolved	208	0.177	0.0513	0.100	ug/L		ND					
Silver, Dissolved	107	ND	0.0220	0.200	ug/L		ND					U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L		ND					U
Arsenic, Dissolved	75a	0.252	0.0373	0.200	ug/L		0.192			27.00	20	L
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L		ND					U
Copper, Dissolved	63	0.193	0.173	0.500	ug/L		ND					J
Nickel, Dissolved	60	0.149	0.0792	0.500	ug/L		0.163			8.97	20	J
Zinc, Dissolved	66	ND	2.92	6.00	ug/L		ND					U



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Project Number: 150218
Project Manager: Ali Cochrane

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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKL0195 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BKL0195-DUP2)			Source: 22K0471-04			Prepared: 08-Dec-2022 Analyzed: 16-Dec-2022 08:26						
Beryllium, Dissolved	9	ND	0.0342	0.400	ug/L		ND					U
Selenium, Dissolved	78	ND	0.358	1.00	ug/L		ND					U

Matrix Spike (BKL0195-MS1)			Source: 22K0471-04			Prepared: 08-Dec-2022 Analyzed: 13-Dec-2022 01:10						
Antimony, Dissolved	121	23.6	0.101	0.200	ug/L	25.0	ND	94.5	75-125			
Lead, Dissolved	208	21.7	0.0513	0.100	ug/L	25.0	ND	86.8	75-125			
Silver, Dissolved	107	21.4	0.0220	0.200	ug/L	25.0	ND	85.7	75-125			
Thallium, Dissolved	205	21.7	0.0234	0.200	ug/L	25.0	ND	86.8	75-125			
Arsenic, Dissolved	75a	24.8	0.0373	0.200	ug/L	25.0	0.192	98.4	75-125			
Cadmium, Dissolved	111	22.2	0.0300	0.100	ug/L	25.0	ND	88.8	75-125			
Copper, Dissolved	63	23.7	0.173	0.500	ug/L	25.0	ND	94.7	75-125			
Nickel, Dissolved	60	24.5	0.0792	0.500	ug/L	25.0	0.163	97.3	75-125			
Zinc, Dissolved	66	70.3	2.92	6.00	ug/L	80.0	ND	87.8	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BKL0195-MS2)			Source: 22K0471-04			Prepared: 08-Dec-2022 Analyzed: 16-Dec-2022 08:31						
Beryllium, Dissolved	9	22.8	0.0342	0.400	ug/L	25.0	ND	91.1	75-125			D
Selenium, Dissolved	78	76.4	0.358	1.00	ug/L	80.0	ND	95.5	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKL0195-MSD1)			Source: 22K0471-04			Prepared: 08-Dec-2022 Analyzed: 13-Dec-2022 01:16						
Antimony, Dissolved	121	24.3	0.101	0.200	ug/L	25.0	ND	97.2	75-125	2.85	20	
Lead, Dissolved	208	21.8	0.0513	0.100	ug/L	25.0	ND	87.2	75-125	0.50	20	
Silver, Dissolved	107	21.9	0.0220	0.200	ug/L	25.0	ND	87.8	75-125	2.43	20	
Thallium, Dissolved	205	21.8	0.0234	0.200	ug/L	25.0	ND	87.3	75-125	0.57	20	
Arsenic, Dissolved	75a	24.0	0.0373	0.200	ug/L	25.0	0.192	95.3	75-125	3.22	20	
Cadmium, Dissolved	111	22.1	0.0300	0.100	ug/L	25.0	ND	88.4	75-125	0.42	20	
Copper, Dissolved	63	23.2	0.173	0.500	ug/L	25.0	ND	92.8	75-125	2.00	20	
Nickel, Dissolved	60	24.0	0.0792	0.500	ug/L	25.0	0.163	95.3	75-125	2.00	20	
Zinc, Dissolved	66	68.4	2.92	6.00	ug/L	80.0	ND	85.5	75-125	2.64	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKL0195-MSD2)			Source: 22K0471-04			Prepared: 08-Dec-2022 Analyzed: 16-Dec-2022 08:38						
Beryllium, Dissolved	9	22.8	0.0342	0.400	ug/L	25.0	ND	91.3	75-125	0.22	20	D
Selenium, Dissolved	78	79.1	0.358	1.00	ug/L	80.0	ND	98.9	75-125	3.46	20	D



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BKL0195 - EPA 6020B UCT-KED

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Blank (BKL0195-BLK2)

Prepared: 08-Dec-2022 Analyzed: 14-Dec-2022 21:07

Beryllium, Dissolved	9	ND	0.0171	0.200	ug/L							U
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LCS (BKL0195-BS2)

Prepared: 08-Dec-2022 Analyzed: 14-Dec-2022 21:13

Beryllium, Dissolved	9	25.0	0.0171	0.200	ug/L	25.0		99.9	80-120			
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Duplicate (BKL0195-DUP3)

Source: 22K0471-04

Prepared: 08-Dec-2022 Analyzed: 19-Dec-2022 22:24

Chromium, Dissolved	52	1.42	1.30	2.50	ug/L		ND					J, D
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Matrix Spike (BKL0195-MS3)

Source: 22K0471-04

Prepared: 08-Dec-2022 Analyzed: 19-Dec-2022 22:29

Chromium, Dissolved	52	24.0	1.30	2.50	ug/L	25.0	ND	96.1	75-125			D
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Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BKL0195-MSD3)

Source: 22K0471-04

Prepared: 08-Dec-2022 Analyzed: 19-Dec-2022 22:34

Chromium, Dissolved	52	24.2	1.30	2.50	ug/L	25.0	ND	96.9	75-125	0.89	20	D
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Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Silver-107	WADOE,WA-DW,DoD-ELAP,NELAP
Beryllium-9	NELAP,WADOE,DoD-ELAP
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-53	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
Antimony-121	NELAP,WADOE,DoD-ELAP
Antimony-123	NELAP
Thallium-205	WADOE,WA-DW,DoD-ELAP,NELAP
Silver-107	WA-DW,DoD-ELAP,NELAP
Beryllium-9	WADOE,DoD-ELAP,NELAP
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-53	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
Antimony-121	NELAP,WADOE,DoD-ELAP
Antimony-123	NELAP,WADOE,DoD-ELAP
Thallium-205	NELAP,WADOE,DoD-ELAP
EPA 6020B UCT-KED in Water	
Arsenic-75a	WADOE,WA-DW,DoD-ELAP,ADEC,NELAP
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Copper-63	NELAP,WADOE,DoD-ELAP
Copper-65	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Nickel-62	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP
Zinc-66	WADOE,WA-DW,DoD-ELAP
Zinc-67	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Copper-63	NELAP,WADOE,DoD-ELAP
Copper-65	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Nickel-62	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP



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Zinc-66 NELAP,WADOE,DoD-ELAP
Zinc-67 NELAP,WADOE,DoD-ELAP

EPA 7470A in Water

Mercury WADOE,NELAP,DoD-ELAP
Mercury WADOE,NELAP,DoD-ELAP

EPA 8082A in Water

Aroclor 1016 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1016 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 [2C] WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 [2C] WADOE,DoD-ELAP,NELAP,ADEC

EPA 8260D in Water

Chloromethane DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane DoD-ELAP,ADEC,NELAP,WADOE
Acrolein DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane DoD-ELAP,ADEC,NELAP,WADOE
Acetone DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane DoD-ELAP,NELAP,WADOE
Methylene Chloride DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile DoD-ELAP,NELAP,WADOE
Carbon Disulfide DoD-ELAP,NELAP,WADOE



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trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE



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Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA 8270E in Water

Phenol	NELAP,DoD-ELAP
bis(2-chloroethyl) ether	NELAP,DoD-ELAP
2-Chlorophenol	NELAP,DoD-ELAP
1,3-Dichlorobenzene	NELAP,DoD-ELAP
1,4-Dichlorobenzene	NELAP,DoD-ELAP
1,2-Dichlorobenzene	NELAP,DoD-ELAP
Benzyl Alcohol	NELAP,DoD-ELAP
2,2'-Oxybis(1-chloropropane)	NELAP,DoD-ELAP
2-Methylphenol	NELAP,DoD-ELAP
Hexachloroethane	NELAP,DoD-ELAP
N-Nitroso-di-n-Propylamine	NELAP,DoD-ELAP
4-Methylphenol	NELAP,DoD-ELAP
Nitrobenzene	NELAP,DoD-ELAP
Isophorone	NELAP,DoD-ELAP
2-Nitrophenol	NELAP,DoD-ELAP
2,4-Dimethylphenol	NELAP,DoD-ELAP



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Bis(2-Chloroethoxy)methane	NELAP,DoD-ELAP
2,4-Dichlorophenol	NELAP,DoD-ELAP
1,2,4-Trichlorobenzene	NELAP,DoD-ELAP
Naphthalene	NELAP,DoD-ELAP
Benzoic acid	NELAP,DoD-ELAP
4-Chloroaniline	NELAP,DoD-ELAP
Hexachlorobutadiene	NELAP,DoD-ELAP
4-Chloro-3-Methylphenol	NELAP,DoD-ELAP
2-Methylnaphthalene	NELAP,DoD-ELAP
Hexachlorocyclopentadiene	NELAP,DoD-ELAP
2,4,6-Trichlorophenol	NELAP,DoD-ELAP
2,4,5-Trichlorophenol	NELAP,DoD-ELAP
2-Chloronaphthalene	NELAP,DoD-ELAP
2-Nitroaniline	NELAP,DoD-ELAP
Acenaphthylene	NELAP,DoD-ELAP
Dimethylphthalate	NELAP,DoD-ELAP
2,6-Dinitrotoluene	NELAP,DoD-ELAP
Acenaphthene	NELAP,DoD-ELAP
3-Nitroaniline	NELAP,DoD-ELAP
2,4-Dinitrophenol	NELAP,DoD-ELAP
Dibenzofuran	NELAP,DoD-ELAP
4-Nitrophenol	NELAP,DoD-ELAP
2,4-Dinitrotoluene	NELAP,DoD-ELAP
Fluorene	NELAP,DoD-ELAP
4-Chlorophenylphenyl ether	NELAP,DoD-ELAP
Diethyl phthalate	NELAP,DoD-ELAP
4-Nitroaniline	NELAP,DoD-ELAP
4,6-Dinitro-2-methylphenol	NELAP,DoD-ELAP
N-Nitrosodiphenylamine	NELAP,DoD-ELAP
4-Bromophenyl phenyl ether	NELAP,DoD-ELAP
Hexachlorobenzene	NELAP,DoD-ELAP
Pentachlorophenol	NELAP,DoD-ELAP
Phenanthrene	NELAP,DoD-ELAP
Anthracene	NELAP,DoD-ELAP
Carbazole	NELAP,DoD-ELAP
Di-n-Butylphthalate	NELAP,DoD-ELAP
Fluoranthene	NELAP,DoD-ELAP
Pyrene	NELAP,DoD-ELAP
Butylbenzylphthalate	NELAP,DoD-ELAP



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
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Reported:
06-Jan-2023 18:12

Benzo(a)anthracene	NELAP,DoD-ELAP
3,3'-Dichlorobenzidine	NELAP,DoD-ELAP
Chrysene	NELAP,DoD-ELAP
bis(2-Ethylhexyl)phthalate	NELAP,DoD-ELAP
Di-n-Octylphthalate	NELAP,DoD-ELAP
Benzo(b)fluoranthene	NELAP,DoD-ELAP
Benzo(k)fluoranthene	NELAP,DoD-ELAP
Benzo(a)pyrene	NELAP,DoD-ELAP
Indeno(1,2,3-cd)pyrene	NELAP,DoD-ELAP
Dibenzo(a,h)anthracene	NELAP,DoD-ELAP
Benzo(g,h,i)perylene	NELAP,DoD-ELAP
N-Nitrosodimethylamine	NELAP,DoD-ELAP
1-Methylnaphthalene	NELAP,DoD-ELAP

EPA 8270E-SIM in Water

Naphthalene	ADEC,DoD-ELAP,NELAP,WADOE
2-Methylnaphthalene	ADEC,DoD-ELAP,NELAP
1-Methylnaphthalene	ADEC,DoD-ELAP,NELAP,WADOE
Biphenyl	NELAP
Acenaphthylene	ADEC,DoD-ELAP,NELAP,WADOE
Acenaphthene	ADEC,DoD-ELAP,NELAP,WADOE
Dibenzofuran	ADEC,DoD-ELAP,NELAP
Fluorene	ADEC,DoD-ELAP,NELAP,WADOE
Phenanthrene	ADEC,DoD-ELAP,NELAP,WADOE
Anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Carbazole	NELAP
Fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(a)anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Chrysene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(b)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(k)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(j)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(e)pyrene	NELAP
Benzo(a)pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Perylene	ADEC,NELAP
Indeno(1,2,3-cd)pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Dibenzo(a,h)anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(g,h,i)perylene	ADEC,DoD-ELAP,NELAP,WADOE



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Reported:
06-Jan-2023 18:12

NWTPH-Dx in Water

Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
06-Jan-2023 18:12

Notes and Definitions

- * Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- D1 Surrogate was not detected due to sample extract dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- H Hold time violation - Hold time was exceeded.
- J Estimated concentration value detected below the reporting limit.
- L Analyte concentration is ≤ 5 times the reporting limit and the replicate control limit defaults to \pm RL instead of 20% RPD
- P1 The reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ($< 20\%$ RSD, $< 20\%$ drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants

09 February 2023

Ali Cochrane
Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle, WA 98104

RE: West Duwamish CSO (150218-A-4500.04)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
22L0642

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Shelly Fishel, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 22L0642 Turn-around Requested:

Page: 1 of 1



Analytical Resources, LLC
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

ARI Client Company: Aspect Consulting Phone: 435 714 4531

Date: 12/29/22 Ice Present? Yes

Client Contact: Ali Lochrane alochrane@aspectconsulting.com

No. of Coolers: 3 Cooler Temps: 5.7 4.6 5.6

Client Project Name: King County Duwamish CSO
West Duwamish CSO

Analysis Requested

Client Project #: 150218-A-4500.04 Samplers: David Mackay

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested								Notes/Comments
					NWTPH-6X	NWTPH-0X	VOC's + BTEX 8260	SVOL's 8270	SIM PAH 82700-SIM	PCB-LL including 8082	Total Metals * Dissolved Metals	PCB congeners	
MW-09-122922	12/29/22	0925	W	1.7	X	X	X	X	X	X	X	X	* Priority pollutants metals dissolved metals were field filtered Samples Effervesced white flitting boats
MW-10-122822	12/28/22	1545	↓	↓	↓	↓	↓	↓	↓	↓	↓	[HOLD]	
MW-11-122822	↓	1250	↓	↓	↓	↓	↓	↓	↓	↓	↓		
MW-x-122822	↓	0100	↓	↓	↓	↓	↓	↓	↓	↓	↓		
Trip Blank			↓	2	X		X						

Comments/Special Instructions Level 2 Data validation MS/MSD analysis needed See QAPP for additional details	Relinquished by: (Signature) <u>David Mackay</u>	Received by: (Signature) <u>Jacob Walte</u>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: <u>David Mackay</u>	Printed Name: <u>Jacob Walte</u>	Printed Name:	Printed Name:
	Company: <u>Aspect Consulting</u>	Company: <u>ARI, LLC</u>	Company:	Company:
	Date & Time: <u>12/29/22 1640</u>	Date & Time: <u>12/29/22 1640</u>	Date & Time:	Date & Time:

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



WORK ORDER

22L0598

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Bayer US

Project Manager: Shelly Fishel

Project: Bayer Demo Unit WTP

Project Number: [none]

Analysis groups included in this work order

Hardness, Calculated (6010D)

Met 6010D - Mg

Langelier Index Group (6010D)

Temp C pH, SM 4500-H Met 6010D - Ca Langelier Index (Calculation)
Conductivity, Specific Conduc Alkalinity, Total SM 2320 B-9

Preservation Confirmation

Container ID	Container Type	pH
22L0598-01 A	HDPE NM, 500 mL	7.2 fail
22L0598-01 B	HDPE NM, 500 mL, 9N H2SO4	7.2 fail
22L0598-01 C	HDPE NM, 1000 mL	
22L0598-01 D	HDPE NM, 500 mL, 1:1 HNO3	6.2 Pass
22L0598-02 A	HDPE NM, 500 mL, 1:1 HNO3	6.2 Pass
22L0598-02 B	Miscellaneous Container	7.2 fail (1)

[Signature]
Preservation Confirmed By

12/29/22
Date

(1) Filtered at 0.45um and preserved to pH 6.0 with 0.25ml conc HNO3 (K11506).

ML 12/30/22



WORK ORDER

22L0642

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218-A-4500.04

22L0642-05 A	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 B	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 C	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 D	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 E	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 F	Glass NM, Amber, 500 mL	
22L0642-05 G	Glass NM, Amber, 500 mL	
22L0642-05 H	Glass NM, Amber, 500 mL	
22L0642-05 I	Glass NM, Amber, 500 mL	
22L0642-05 J	Glass NM, Amber, 500 mL	
22L0642-05 K	Glass NM, Amber, 500 mL	
22L0642-05 L	Glass NM, Amber, 1000 mL	
22L0642-05 M	Glass NM, Amber, 1000 mL	
22L0642-05 N	Glass NM, Amber, 1000 mL	
22L0642-05 O	Glass NM, Amber, 1000 mL	
22L0642-05 P	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 Pass
22L0642-07 A	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 B	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 C	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 D	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 E	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 F	Glass NM, Amber, 500 mL	
22L0642-07 G	Glass NM, Amber, 500 mL	
22L0642-07 H	Glass NM, Amber, 500 mL	
22L0642-07 I	Glass NM, Amber, 500 mL	
22L0642-07 J	Glass NM, Amber, 500 mL	
22L0642-07 K	Glass NM, Amber, 500 mL	
22L0642-07 L	Glass NM, Amber, 1000 mL	
22L0642-07 M	Glass NM, Amber, 1000 mL	
22L0642-07 N	Glass NM, Amber, 1000 mL	
22L0642-07 O	Glass NM, Amber, 1000 mL	
22L0642-07 P	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-07 Q	Miscellaneous Container	22 Fail
22L0642-08 A	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-08 B	Miscellaneous Container	22 Fail (1)

① filtered at 0.45 um and preserved to pH 2.20 with 0.25ml conc.

Reviewed By _____

Date _____

HN:



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-09-122922	22L0642-01	Water	29-Dec-2022 09:25	29-Dec-2022 16:40
MW-10-122822	22L0642-03	Water	28-Dec-2022 15:45	29-Dec-2022 16:40
MW-11-122822	22L0642-05	Water	28-Dec-2022 12:50	29-Dec-2022 16:40
MW-X-122822	22L0642-07	Water	28-Dec-2022 01:00	29-Dec-2022 16:40
Trip Blank	22L0642-09	Water	28-Dec-2022 12:50	29-Dec-2022 16:40



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

Work Order Case Narrative

Client: Aspect Consulting, LLC.
Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Work Order: 22L0642

Revised report - February 9, 2023

This report was revised to report full Volatiles list instead of shortened reporting of BTEX only .

Sample receipt

Sample(s) as listed on the preceding page were received 29-Dec-2022 16:40 under ARI work order 22L0642. For details regarding sample receipt, please refer to the Cooler Receipt Form.

The bottle kit requested was for three samples plus four extra bottles per extraction method and six extra vials for volatile methods for the matrix spike/matrix spike duplicate (MS/MSD) analysis. Four samples were submitted. It is possible that the additional bottles/vials were used for this fourth sample. Without additional volume provided, MS/MSD was not performed for organics methods.

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except Aroclor 1260 which was out of control high in the continuing calibration verifications on column zb-5. Data reported from passing column zb-35.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

No extra volume was provided so MS/MSD was not performed.

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.



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Project Number: 150218-A-4500.04
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Reported:
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Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

No extra volume was provided so MS/MSD was not performed.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

No extra volume was provided so MS/MSD was not performed.

Semivolatiles - EPA Method SW8270E

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except Fluorene which was out of control low and 4-Nitrophenol which was out of control high in the initial calibration verification. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except Phenol-D5 and 2-Fluorophenol which were out of control low as flagged in the samples and associated QC.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD)



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Project Number: 150218-A-4500.04
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Reported:
09-Feb-2023 11:50

were within control limits except as flagged.

No extra volume was provided so MS/MSD was not performed.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270E-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except Fluornathene-d10 which was out of control low in sample 22L0642-03RE1. The deviation has been flagged.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

No extra volume was provided so MS/MSD was not performed.

Total and Dissolved Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits except Dissolved Copper and Dissolved Lead. The deviations have been "B" qualified.

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Total and Dissolved Mercury - EPA Method 7470/7471

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
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Reported:
09-Feb-2023 11:50

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

No extra volume was provided so MS/MSD was not performed.



Cooler Receipt Form

ARI Client: Aspect Consulting
 COC No(s): _____ NA
 Assigned ARI Job No: 22L0642

Project Name: King County Dinamish
 Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
 Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO
 Were custody papers included with the cooler? YES NO
 Were custody papers properly filled out (ink, signed, etc.) YES NO
 Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1640 5:17 4:6 5:6 _____
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: J0009708

Cooler Accepted by: JS Date: 12/29/22 Time: 1640

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
 What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
 Was sufficient ice used (if appropriate)? NA YES NO
 How were bottles sealed in plastic bags? Individually Grouped Not
 Did all bottles arrive in good condition (unbroken)? YES NO
 Were all bottle labels complete and legible? YES NO
 Did the number of containers listed on COC match with the number of containers received? YES NO
 Did all bottle labels and tags agree with custody papers? YES NO
 Were all bottles used correct for the requested analyses? YES NO
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO
 Were all VOC vials free of air bubbles? TS NA YES NO
 Was sufficient amount of sample sent in each bottle? YES NO
 Date VOC Trip Blank was made at ARI NA 12/22/22
 Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JS Date: 12/29/22 Time: 8:28 Labels checked by: PIB

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



WORK ORDER

22L0642

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218-A-4500.04

22L0642-05 A	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 B	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 C	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 D	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 E	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 F	Glass NM, Amber, 500 mL	
22L0642-05 G	Glass NM, Amber, 500 mL	
22L0642-05 H	Glass NM, Amber, 500 mL	
22L0642-05 I	Glass NM, Amber, 500 mL	
22L0642-05 J	Glass NM, Amber, 500 mL	
22L0642-05 K	Glass NM, Amber, 500 mL	
22L0642-05 L	Glass NM, Amber, 1000 mL	
22L0642-05 M	Glass NM, Amber, 1000 mL	
22L0642-05 N	Glass NM, Amber, 1000 mL	
22L0642-05 O	Glass NM, Amber, 1000 mL	
22L0642-05 P	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 Pass
22L0642-07 A	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 B	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 C	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 D	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 E	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 F	Glass NM, Amber, 500 mL	
22L0642-07 G	Glass NM, Amber, 500 mL	
22L0642-07 H	Glass NM, Amber, 500 mL	
22L0642-07 I	Glass NM, Amber, 500 mL	
22L0642-07 J	Glass NM, Amber, 500 mL	
22L0642-07 K	Glass NM, Amber, 500 mL	
22L0642-07 L	Glass NM, Amber, 1000 mL	
22L0642-07 M	Glass NM, Amber, 1000 mL	
22L0642-07 N	Glass NM, Amber, 1000 mL	
22L0642-07 O	Glass NM, Amber, 1000 mL	
22L0642-07 P	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-07 Q	Miscellaneous Container	22 Fail
22L0642-08 A	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-08 B	Miscellaneous Container	22 Fail



WORK ORDER

22L0642

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218-A-4500.04

22L0642-05 A	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 B	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 C	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 D	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 E	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 F	Glass NM, Amber, 500 mL	
22L0642-05 G	Glass NM, Amber, 500 mL	
22L0642-05 H	Glass NM, Amber, 500 mL	
22L0642-05 I	Glass NM, Amber, 500 mL	
22L0642-05 J	Glass NM, Amber, 500 mL	
22L0642-05 K	Glass NM, Amber, 500 mL	
22L0642-05 L	Glass NM, Amber, 1000 mL	
22L0642-05 M	Glass NM, Amber, 1000 mL	
22L0642-05 N	Glass NM, Amber, 1000 mL	
22L0642-05 O	Glass NM, Amber, 1000 mL	
22L0642-05 P	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 Pass
22L0642-07 A	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 B	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 C	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 D	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 E	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 F	Glass NM, Amber, 500 mL	
22L0642-07 G	Glass NM, Amber, 500 mL	
22L0642-07 H	Glass NM, Amber, 500 mL	
22L0642-07 I	Glass NM, Amber, 500 mL	
22L0642-07 J	Glass NM, Amber, 500 mL	
22L0642-07 K	Glass NM, Amber, 500 mL	
22L0642-07 L	Glass NM, Amber, 1000 mL	
22L0642-07 M	Glass NM, Amber, 1000 mL	
22L0642-07 N	Glass NM, Amber, 1000 mL	
22L0642-07 O	Glass NM, Amber, 1000 mL	
22L0642-07 P	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-07 Q	Miscellaneous Container	22 Pass
22L0642-08 A	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-08 B	Miscellaneous Container	22 Pass



WORK ORDER

22L0642

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

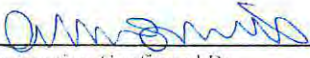
Project Manager: Shelly Fishel

Project: West Duwamish CSO


Project Number: 150218-A-4500.04

22L0642-09 A VOA Vial, Clear, 40 mL, HCL

22L0642-09 B VOA Vial, Clear, 40 mL, HCL



Preservation Confirmed By



Date



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

MW-09-122922
22L0642-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/29/2022 09:25

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 16:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLA0054
Prepared: 01/04/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22L0642-01 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

MW-09-122922
22L0642-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/29/2022 09:25

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 16:16

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

MW-09-122922
22L0642-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/29/2022 09:25

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 16:16

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	106	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	98.2	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	99.2	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	101	%	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

MW-10-122822
22L0642-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 15:45

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 16:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLA0054
Prepared: 01/04/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22L0642-03 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

MW-10-122822
22L0642-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 15:45

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 16:38

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218-A-4500.04 Project Manager: Ali Cochrane	Reported: 09-Feb-2023 11:50
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MW-10-122822
22L0642-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 15:45

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 16:38

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	110	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	102	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	96.3	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	103	%	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

MW-11-122822
22L0642-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 12:50

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 17:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLA0054
Prepared: 01/04/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22L0642-05 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

MW-11-122822
22L0642-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 12:50

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 17:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

MW-11-122822
22L0642-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 12:50

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 17:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	115	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	98.0	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	99.2	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	99.9	%	



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

MW-X-122822
22L0642-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 01:00

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 17:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLA0054
Prepared: 01/04/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22L0642-07 E

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

MW-X-122822
22L0642-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 01:00

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 17:22

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

MW-X-122822
22L0642-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 01:00

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 17:22

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				<i>80-129 %</i>	<i>109</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>				<i>80-120 %</i>	<i>101</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>96.4</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				<i>80-120 %</i>	<i>104</i>	<i>%</i>	



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

Trip Blank
22L0642-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 12:50

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 13:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLA0054
Prepared: 01/04/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 22L0642-09 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.74	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.18	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	4.33	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.43	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.12	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.09	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

Trip Blank
22L0642-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 12:50

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 13:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.10	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.10	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

Trip Blank
22L0642-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 12:50

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 13:36

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	107	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	98.2	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	97.3	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	99.2	%	



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLA0054 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLA0054-BLK2)						Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 12:28					
Chloromethane	ND	0.27	0.50	ug/L							U
Vinyl Chloride	ND	0.08	0.20	ug/L							U
Bromomethane	ND	0.74	1.00	ug/L							U
Chloroethane	ND	0.18	0.20	ug/L							U
Trichlorofluoromethane	ND	0.13	0.20	ug/L							U
Acrolein	ND	2.70	5.00	ug/L							U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.11	0.20	ug/L							U
Acetone	ND	4.33	5.00	ug/L							U
1,1-Dichloroethene	ND	0.08	0.20	ug/L							U
Iodomethane	ND	0.43	1.00	ug/L							U
Methylene Chloride	ND	0.53	1.00	ug/L							U
Acrylonitrile	ND	0.40	1.00	ug/L							U
Carbon Disulfide	ND	0.12	0.20	ug/L							U
trans-1,2-Dichloroethene	ND	0.07	0.20	ug/L							U
Vinyl Acetate	ND	0.12	0.20	ug/L							U
1,1-Dichloroethane	ND	0.09	0.20	ug/L							U
2-Butanone	ND	1.77	5.00	ug/L							U
2,2-Dichloropropane	ND	0.11	0.20	ug/L							U
cis-1,2-Dichloroethene	ND	0.08	0.20	ug/L							U
Chloroform	ND	0.05	0.20	ug/L							U
Bromochloromethane	ND	0.09	0.20	ug/L							U
1,1,1-Trichloroethane	ND	0.08	0.20	ug/L							U
1,1-Dichloropropene	ND	0.09	0.20	ug/L							U
Carbon tetrachloride	ND	0.09	0.20	ug/L							U
1,2-Dichloroethane	ND	0.08	0.20	ug/L							U
Benzene	ND	0.05	0.20	ug/L							U
Trichloroethene	ND	0.07	0.20	ug/L							U
1,2-Dichloropropane	ND	0.07	0.20	ug/L							U
Bromodichloromethane	ND	0.09	0.20	ug/L							U
Dibromomethane	ND	0.06	0.20	ug/L							U
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	1.90	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U
Toluene	ND	0.05	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
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Reported:
09-Feb-2023 11:50

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLA0054 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLA0054-BLK2)											
						Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 12:28					
2-Hexanone	ND	2.06	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.10	0.20	ug/L							U
1,3-Dichloropropane	ND	0.07	0.20	ug/L							U
Tetrachloroethene	ND	0.09	0.20	ug/L							U
Dibromochloromethane	ND	0.09	0.20	ug/L							U
1,2-Dibromoethane	ND	0.09	0.20	ug/L							U
Chlorobenzene	ND	0.06	0.20	ug/L							U
Ethylbenzene	ND	0.05	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.09	0.20	ug/L							U
m,p-Xylene	ND	0.14	0.40	ug/L							U
o-Xylene	ND	0.08	0.20	ug/L							U
Xylenes, total	ND	0.22	0.60	ug/L							U
Styrene	ND	0.09	0.20	ug/L							U
Bromoform	ND	0.15	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.10	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.16	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	0.60	1.00	ug/L							U
n-Propylbenzene	ND	0.07	0.20	ug/L							U
Bromobenzene	ND	0.07	0.20	ug/L							U
Isopropyl Benzene	ND	0.07	0.20	ug/L							U
2-Chlorotoluene	ND	0.06	0.20	ug/L							U
4-Chlorotoluene	ND	0.06	0.20	ug/L							U
t-Butylbenzene	ND	0.07	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.07	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.10	0.20	ug/L							U
s-Butylbenzene	ND	0.06	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.08	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.10	0.20	ug/L							U
n-Butylbenzene	ND	0.18	0.20	ug/L							U
1,2-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.39	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.21	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	1.00	2.00	ug/L							U
Naphthalene	ND	0.27	0.50	ug/L							U



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLA0054 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLA0054-BLK2)											
						Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 12:28					
1,2,3-Trichlorobenzene	ND	0.25	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.13	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.14	0.50	ug/L							U
2-Pentanone	ND	2.34	5.00	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.19			ug/L	5.00		104	80-129			
<i>Surrogate: Toluene-d8</i>	5.02			ug/L	5.00		100	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.97			ug/L	5.00		99.4	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.97			ug/L	5.00		99.3	80-120			
LCS (BLA0054-BS2)											
						Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 10:59					
Chloromethane	8.78	0.27	0.50	ug/L	10.0		87.8	60-138			
Vinyl Chloride	8.81	0.08	0.20	ug/L	10.0		88.1	66-133			
Bromomethane	9.16	0.74	1.00	ug/L	10.0		91.6	72-131			
Chloroethane	8.78	0.18	0.20	ug/L	10.0		87.8	60-155			
Trichlorofluoromethane	9.27	0.13	0.20	ug/L	10.0		92.7	62-141			
Acrolein	42.5	2.70	5.00	ug/L	50.0		84.9	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	8.32	0.11	0.20	ug/L	10.0		83.2	76-129			
Acetone	41.7	4.33	5.00	ug/L	50.0		83.5	58-142			
1,1-Dichloroethene	8.86	0.08	0.20	ug/L	10.0		88.6	69-135			
Iodomethane	8.83	0.43	1.00	ug/L	10.0		88.3	56-147			
Methylene Chloride	8.72	0.53	1.00	ug/L	10.0		87.2	65-135			
Acrylonitrile	8.62	0.40	1.00	ug/L	10.0		86.2	64-134			
Carbon Disulfide	8.69	0.12	0.20	ug/L	10.0		86.9	78-125			
trans-1,2-Dichloroethene	8.92	0.07	0.20	ug/L	10.0		89.2	78-128			
Vinyl Acetate	9.58	0.12	0.20	ug/L	10.0		95.8	55-138			
1,1-Dichloroethane	9.08	0.09	0.20	ug/L	10.0		90.8	76-124			
2-Butanone	44.7	1.77	5.00	ug/L	50.0		89.4	61-140			
2,2-Dichloropropane	9.56	0.11	0.20	ug/L	10.0		95.6	66-147			
cis-1,2-Dichloroethene	8.96	0.08	0.20	ug/L	10.0		89.6	80-121			
Chloroform	9.00	0.05	0.20	ug/L	10.0		90.0	80-122			
Bromochloromethane	8.90	0.09	0.20	ug/L	10.0		89.0	80-121			
1,1,1-Trichloroethane	8.98	0.08	0.20	ug/L	10.0		89.8	79-123			
1,1-Dichloropropene	8.64	0.09	0.20	ug/L	10.0		86.4	80-127			
Carbon tetrachloride	9.08	0.09	0.20	ug/L	10.0		90.8	53-137			
1,2-Dichloroethane	8.86	0.08	0.20	ug/L	10.0		88.6	75-123			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLA0054 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLA0054-BS2)						Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 10:59					
Benzene	9.04	0.05	0.20	ug/L	10.0		90.4	80-120			
Trichloroethene	8.94	0.07	0.20	ug/L	10.0		89.4	80-120			
1,2-Dichloropropane	8.92	0.07	0.20	ug/L	10.0		89.2	80-120			
Bromodichloromethane	8.82	0.09	0.20	ug/L	10.0		88.2	80-121			
Dibromomethane	8.51	0.06	0.20	ug/L	10.0		85.1	80-120			
2-Chloroethyl vinyl ether	9.10	0.55	1.00	ug/L	10.0		91.0	64-120			
4-Methyl-2-Pentanone	47.5	1.90	5.00	ug/L	50.0		95.0	67-133			
cis-1,3-Dichloropropene	9.19	0.09	0.20	ug/L	10.0		91.9	80-124			
Toluene	8.91	0.05	0.20	ug/L	10.0		89.1	80-120			
trans-1,3-Dichloropropene	9.04	0.09	0.20	ug/L	10.0		90.4	71-127			
2-Hexanone	44.4	2.06	5.00	ug/L	50.0		88.7	69-133			
1,1,2-Trichloroethane	8.76	0.10	0.20	ug/L	10.0		87.6	80-121			
1,3-Dichloropropane	8.60	0.07	0.20	ug/L	10.0		86.0	80-120			
Tetrachloroethene	8.55	0.09	0.20	ug/L	10.0		85.5	80-120			
Dibromochloromethane	8.94	0.09	0.20	ug/L	10.0		89.4	65-135			
1,2-Dibromoethane	8.95	0.09	0.20	ug/L	10.0		89.5	80-121			
Chlorobenzene	8.79	0.06	0.20	ug/L	10.0		87.9	80-120			
Ethylbenzene	8.78	0.05	0.20	ug/L	10.0		87.8	80-120			
1,1,1,2-Tetrachloroethane	9.05	0.09	0.20	ug/L	10.0		90.5	80-120			
m,p-Xylene	18.6	0.14	0.40	ug/L	20.0		93.0	80-121			
o-Xylene	8.97	0.08	0.20	ug/L	10.0		89.7	80-121			
Xylenes, total	27.6	0.22	0.60	ug/L	30.0		91.9	76-127			
Styrene	9.37	0.09	0.20	ug/L	10.0		93.7	80-124			
Bromoform	7.76	0.15	0.20	ug/L	10.0		77.6	51-134			Q
1,1,2,2-Tetrachloroethane	9.18	0.10	0.20	ug/L	10.0		91.8	77-123			
1,2,3-Trichloropropane	8.93	0.16	0.50	ug/L	10.0		89.3	76-125			
trans-1,4-Dichloro 2-Butene	9.81	0.60	1.00	ug/L	10.0		98.1	55-129			
n-Propylbenzene	9.76	0.07	0.20	ug/L	10.0		97.6	78-130			
Bromobenzene	9.16	0.07	0.20	ug/L	10.0		91.6	80-120			
Isopropyl Benzene	9.63	0.07	0.20	ug/L	10.0		96.3	80-128			
2-Chlorotoluene	8.90	0.06	0.20	ug/L	10.0		89.0	78-122			
4-Chlorotoluene	9.26	0.06	0.20	ug/L	10.0		92.6	80-121			
t-Butylbenzene	9.48	0.07	0.20	ug/L	10.0		94.8	78-125			
1,3,5-Trimethylbenzene	9.68	0.07	0.20	ug/L	10.0		96.8	80-129			
1,2,4-Trimethylbenzene	9.61	0.10	0.20	ug/L	10.0		96.1	80-127			



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLA0054 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLA0054-BS2)						Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 10:59					
s-Butylbenzene	9.72	0.06	0.20	ug/L	10.0		97.2	78-129			
4-Isopropyl Toluene	9.91	0.08	0.20	ug/L	10.0		99.1	79-130			
1,3-Dichlorobenzene	9.21	0.08	0.20	ug/L	10.0		92.1	80-120			
1,4-Dichlorobenzene	9.02	0.10	0.20	ug/L	10.0		90.2	80-120			
n-Butylbenzene	9.62	0.18	0.20	ug/L	10.0		96.2	74-129			
1,2-Dichlorobenzene	9.14	0.08	0.20	ug/L	10.0		91.4	80-120			
1,2-Dibromo-3-chloropropane	8.74	0.39	0.50	ug/L	10.0		87.4	62-123			
1,2,4-Trichlorobenzene	9.37	0.21	0.50	ug/L	10.0		93.7	64-124			
Hexachloro-1,3-Butadiene	8.98	1.00	2.00	ug/L	10.0		89.8	58-123			
Naphthalene	9.66	0.27	0.50	ug/L	10.0		96.6	50-134			
1,2,3-Trichlorobenzene	9.32	0.25	0.50	ug/L	10.0		93.2	49-133			
Dichlorodifluoromethane	8.85	0.13	0.20	ug/L	10.0		88.5	48-147			
Methyl tert-butyl Ether	8.99	0.14	0.50	ug/L	10.0		89.9	71-132			
2-Pentanone	44.0	2.34	5.00	ug/L	50.0		87.9	69-134			
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Surrogate: 1,2-Dichloroethane-d4	5.04			ug/L	5.00		101	80-129			
Surrogate: Toluene-d8	5.17			ug/L	5.00		103	80-120			
Surrogate: 4-Bromofluorobenzene	4.92			ug/L	5.00		98.3	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.04			ug/L	5.00		101	80-120			
LCS Dup (BLA0054-BSD2)						Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 11:43					
Chloromethane	10.2	0.27	0.50	ug/L	10.0		102	60-138	15.30	30	
Vinyl Chloride	10.1	0.08	0.20	ug/L	10.0		101	66-133	13.40	30	
Bromomethane	10.2	0.74	1.00	ug/L	10.0		102	72-131	10.90	30	
Chloroethane	9.84	0.18	0.20	ug/L	10.0		98.4	60-155	11.40	30	
Trichlorofluoromethane	10.0	0.13	0.20	ug/L	10.0		100	62-141	7.97	30	
Acrolein	48.0	2.70	5.00	ug/L	50.0		96.1	52-190	12.30	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.97	0.11	0.20	ug/L	10.0		99.7	76-129	18.00	30	
Acetone	48.7	4.33	5.00	ug/L	50.0		97.5	58-142	15.50	30	
1,1-Dichloroethene	10.2	0.08	0.20	ug/L	10.0		102	69-135	13.90	30	
Iodomethane	10.2	0.43	1.00	ug/L	10.0		102	56-147	14.70	30	
Methylene Chloride	9.78	0.53	1.00	ug/L	10.0		97.8	65-135	11.50	30	
Acrylonitrile	9.90	0.40	1.00	ug/L	10.0		99.0	64-134	13.80	30	
Carbon Disulfide	9.83	0.12	0.20	ug/L	10.0		98.3	78-125	12.30	30	
trans-1,2-Dichloroethene	10.1	0.07	0.20	ug/L	10.0		101	78-128	12.10	30	
Vinyl Acetate	10.7	0.12	0.20	ug/L	10.0		107	55-138	11.40	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLA0054 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLA0054-BSD2)						Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 11:43					
1,1-Dichloroethane	10.3	0.09	0.20	ug/L	10.0	103	76-124	12.90	30		
2-Butanone	52.5	1.77	5.00	ug/L	50.0	105	61-140	16.00	30		
2,2-Dichloropropane	10.3	0.11	0.20	ug/L	10.0	103	66-147	7.65	30		
cis-1,2-Dichloroethene	10.1	0.08	0.20	ug/L	10.0	101	80-121	12.30	30		
Chloroform	10.2	0.05	0.20	ug/L	10.0	102	80-122	12.20	30		
Bromochloromethane	10.3	0.09	0.20	ug/L	10.0	103	80-121	14.50	30		
1,1,1-Trichloroethane	9.98	0.08	0.20	ug/L	10.0	99.8	79-123	10.60	30		
1,1-Dichloropropene	9.92	0.09	0.20	ug/L	10.0	99.2	80-127	13.80	30		
Carbon tetrachloride	10.2	0.09	0.20	ug/L	10.0	102	53-137	11.10	30		
1,2-Dichloroethane	9.95	0.08	0.20	ug/L	10.0	99.5	75-123	11.60	30		
Benzene	10.1	0.05	0.20	ug/L	10.0	101	80-120	11.40	30		
Trichloroethene	9.96	0.07	0.20	ug/L	10.0	99.6	80-120	10.80	30		
1,2-Dichloropropane	10.0	0.07	0.20	ug/L	10.0	100	80-120	11.60	30		
Bromodichloromethane	9.86	0.09	0.20	ug/L	10.0	98.6	80-121	11.20	30		
Dibromomethane	9.84	0.06	0.20	ug/L	10.0	98.4	80-120	14.50	30		
2-Chloroethyl vinyl ether	9.99	0.55	1.00	ug/L	10.0	99.9	64-120	9.39	30		
4-Methyl-2-Pentanone	54.1	1.90	5.00	ug/L	50.0	108	67-133	13.00	30		
cis-1,3-Dichloropropene	10.4	0.09	0.20	ug/L	10.0	104	80-124	12.10	30		
Toluene	10.1	0.05	0.20	ug/L	10.0	101	80-120	12.60	30		
trans-1,3-Dichloropropene	10.3	0.09	0.20	ug/L	10.0	103	71-127	13.30	30		
2-Hexanone	51.1	2.06	5.00	ug/L	50.0	102	69-133	14.20	30		
1,1,2-Trichloroethane	10.3	0.10	0.20	ug/L	10.0	103	80-121	15.70	30		
1,3-Dichloropropane	9.67	0.07	0.20	ug/L	10.0	96.7	80-120	11.70	30		
Tetrachloroethene	9.59	0.09	0.20	ug/L	10.0	95.9	80-120	11.50	30		
Dibromochloromethane	10.2	0.09	0.20	ug/L	10.0	102	65-135	12.70	30		
1,2-Dibromoethane	10.4	0.09	0.20	ug/L	10.0	104	80-121	14.60	30		
Chlorobenzene	9.87	0.06	0.20	ug/L	10.0	98.7	80-120	11.60	30		
Ethylbenzene	9.85	0.05	0.20	ug/L	10.0	98.5	80-120	11.50	30		
1,1,1,2-Tetrachloroethane	10.2	0.09	0.20	ug/L	10.0	102	80-120	11.50	30		
m,p-Xylene	20.8	0.14	0.40	ug/L	20.0	104	80-121	11.30	30		
o-Xylene	10.1	0.08	0.20	ug/L	10.0	101	80-121	12.00	30		
Xylenes, total	30.9	0.22	0.60	ug/L	30.0	103	76-127	11.50	30		
Styrene	10.4	0.09	0.20	ug/L	10.0	104	80-124	10.90	30		
Bromoform	8.62	0.15	0.20	ug/L	10.0	86.2	51-134	10.50	30	Q	
1,1,2,2-Tetrachloroethane	10.2	0.10	0.20	ug/L	10.0	102	77-123	10.80	30		



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLA0054 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLA0054-BSD2)						Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 11:43					
1,2,3-Trichloropropane	9.91	0.16	0.50	ug/L	10.0		99.1	76-125	10.40	30	
trans-1,4-Dichloro 2-Butene	11.1	0.60	1.00	ug/L	10.0		111	55-129	12.10	30	
n-Propylbenzene	10.5	0.07	0.20	ug/L	10.0		105	78-130	7.66	30	
Bromobenzene	10.1	0.07	0.20	ug/L	10.0		101	80-120	9.68	30	
Isopropyl Benzene	10.5	0.07	0.20	ug/L	10.0		105	80-128	8.84	30	
2-Chlorotoluene	9.82	0.06	0.20	ug/L	10.0		98.2	78-122	9.79	30	
4-Chlorotoluene	10.1	0.06	0.20	ug/L	10.0		101	80-121	8.73	30	
t-Butylbenzene	10.4	0.07	0.20	ug/L	10.0		104	78-125	8.85	30	
1,3,5-Trimethylbenzene	10.7	0.07	0.20	ug/L	10.0		107	80-129	9.60	30	
1,2,4-Trimethylbenzene	10.5	0.10	0.20	ug/L	10.0		105	80-127	8.96	30	
s-Butylbenzene	10.5	0.06	0.20	ug/L	10.0		105	78-129	7.90	30	
4-Isopropyl Toluene	10.7	0.08	0.20	ug/L	10.0		107	79-130	7.70	30	
1,3-Dichlorobenzene	10.1	0.08	0.20	ug/L	10.0		101	80-120	9.13	30	
1,4-Dichlorobenzene	9.95	0.10	0.20	ug/L	10.0		99.5	80-120	9.81	30	
n-Butylbenzene	10.4	0.18	0.20	ug/L	10.0		104	74-129	7.99	30	
1,2-Dichlorobenzene	10.0	0.08	0.20	ug/L	10.0		100	80-120	9.05	30	
1,2-Dibromo-3-chloropropane	9.79	0.39	0.50	ug/L	10.0		97.9	62-123	11.30	30	
1,2,4-Trichlorobenzene	10.0	0.21	0.50	ug/L	10.0		100	64-124	6.97	30	
Hexachloro-1,3-Butadiene	9.49	1.00	2.00	ug/L	10.0		94.9	58-123	5.51	30	
Naphthalene	10.7	0.27	0.50	ug/L	10.0		107	50-134	10.40	30	
1,2,3-Trichlorobenzene	10.1	0.25	0.50	ug/L	10.0		101	49-133	7.86	30	
Dichlorodifluoromethane	9.23	0.13	0.20	ug/L	10.0		92.3	48-147	4.23	30	
Methyl tert-butyl Ether	10.1	0.14	0.50	ug/L	10.0		101	71-132	11.70	30	
2-Pentanone	49.5	2.34	5.00	ug/L	50.0		99.0	69-134	11.80	30	
Surrogate: 1,2-Dichloroethane-d4	5.20			ug/L	5.00		104	80-129			
Surrogate: Toluene-d8	5.12			ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.83			ug/L	5.00		96.6	80-120			
Surrogate: 1,2-Dichlorobenzene-d4	5.09			ug/L	5.00		102	80-120			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

Certified Analyses included in this Report

Analyte	Certifications
EPA 8260D in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218-A-4500.04 Project Manager: Ali Cochrane	Reported: 09-Feb-2023 11:50
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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
09-Feb-2023 11:50

Notes and Definitions

- * Flagged value is not within established control limits.
- J Estimated concentration value detected below the reporting limit.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants

30 January 2023

Ali Cochrane
Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle, WA 98104

RE: West Duwamish CSO (150218-A-4500.04)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
22L0642

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Shelly Fishel, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number: 22L0642 Turn-around Requested:

Page: 1 of 1

ARI Client Company: Aspect Consulting Phone: 435 714 4531

Date: 12/29/22 Ice Present? Yes

Client Contact: Ali Lochrane alochrane@aspectconsulting.com

No. of Coolers: 3 Cooler Temps: 5.7 4.6 5.6



Analytical Resources, LLC
Analytical Chemists and Consultants
4611 South 134th Place, Suite 100
Tukwila, WA 98168
206-695-6200 206-695-6201 (fax)

Client Project Name: King County Duwamish CSO
West Duwamish CSO

Analysis Requested

Client Project #: 150218-A-4500.04 Samplers: David Mackay

Analysis Requested	Notes/Comments
NWTPH-6X NWTPH-0X VOC's + BTEX SVOC's SEM PAH PCB-LL Total Metals PCB congeners	* Priority pollutants dissolved metals were field filtered * Samples Effervesced white flitting beads

Sample ID	Date	Time	Matrix	No. Containers
MW-09-122922	12/29/22	0925	W	1.7
MW-10-122822	12/28/22	1545		
MW-11-122822		1250		
MW-X-122822		0100		
Trip Blank				2

Comments/Special Instructions
Level 2 Data validation MS/MSD analysis needed See QAAPP for additional details

Relinquished by: (Signature) <u>David Mackay</u>	Received by: (Signature) <u>Jacob Walte</u>
Printed Name: <u>David Mackay</u>	Printed Name: <u>Jacob Walte</u>
Company: <u>Aspect Consulting</u>	Company: <u>ARI, LLC</u>
Date & Time: <u>12/29/22 1640</u>	Date & Time: <u>12/29/22 1640</u>

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, not withstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



WORK ORDER

22L0598

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Bayer US

Project Manager: Shelly Fishel

Project: Bayer Demo Unit WTP

Project Number: [none]

Analysis groups included in this work order

Hardness, Calculated (6010D)

Met 6010D - Mg

Langelier Index Group (6010D)

Temp C	pH, SM 4500-H	Met 6010D - Ca	Langelier Index (Calculation)
Conductivity, Specific Conduc	Alkalinity, Total SM 2320 B-9		

Preservation Confirmation

Container ID	Container Type	pH
22L0598-01 A	HDPE NM, 500 mL	7.2 fail
22L0598-01 B	HDPE NM, 500 mL, 9N H2SO4	7.2 fail
22L0598-01 C	HDPE NM, 1000 mL	
22L0598-01 D	HDPE NM, 500 mL, 1:1 HNO3	6.2 Pass
22L0598-02 A	HDPE NM, 500 mL, 1:1 HNO3	6.2 Pass
22L0598-02 B	Miscellaneous Container	7.2 fail (1)

[Signature]
Preservation Confirmed By

12/29/22
Date

(1) Filtered at 0.45um and preserved to pH 6.0 with 0.25ml conc HNO3 (K11506).

ML 12/30/22



WORK ORDER

22L0642

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218-A-4500.04

22L0642-05 A	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 B	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 C	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 D	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 E	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 F	Glass NM, Amber, 500 mL	
22L0642-05 G	Glass NM, Amber, 500 mL	
22L0642-05 H	Glass NM, Amber, 500 mL	
22L0642-05 I	Glass NM, Amber, 500 mL	
22L0642-05 J	Glass NM, Amber, 500 mL	
22L0642-05 K	Glass NM, Amber, 500 mL	
22L0642-05 L	Glass NM, Amber, 1000 mL	
22L0642-05 M	Glass NM, Amber, 1000 mL	
22L0642-05 N	Glass NM, Amber, 1000 mL	
22L0642-05 O	Glass NM, Amber, 1000 mL	
22L0642-05 P	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 Pass
22L0642-07 A	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 B	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 C	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 D	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 E	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 F	Glass NM, Amber, 500 mL	
22L0642-07 G	Glass NM, Amber, 500 mL	
22L0642-07 H	Glass NM, Amber, 500 mL	
22L0642-07 I	Glass NM, Amber, 500 mL	
22L0642-07 J	Glass NM, Amber, 500 mL	
22L0642-07 K	Glass NM, Amber, 500 mL	
22L0642-07 L	Glass NM, Amber, 1000 mL	
22L0642-07 M	Glass NM, Amber, 1000 mL	
22L0642-07 N	Glass NM, Amber, 1000 mL	
22L0642-07 O	Glass NM, Amber, 1000 mL	
22L0642-07 P	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-07 Q	Miscellaneous Container	22 Fail
22L0642-08 A	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-08 B	Miscellaneous Container	22 Fail (1)

(1) filtered at 0.45 um and preserved to pH 2.20 with 0.25ml conc.

Reviewed By _____

Date _____

HN



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-09-122922	22L0642-01	Water	29-Dec-2022 09:25	29-Dec-2022 16:40
MW-09-122922	22L0642-02	Water	29-Dec-2022 09:25	29-Dec-2022 16:40
MW-10-122822	22L0642-03	Water	28-Dec-2022 15:45	29-Dec-2022 16:40
MW-10-122822	22L0642-04	Water	28-Dec-2022 15:45	29-Dec-2022 16:40
MW-11-122822	22L0642-05	Water	28-Dec-2022 12:50	29-Dec-2022 16:40
MW-11-122822	22L0642-06	Water	28-Dec-2022 12:50	29-Dec-2022 16:40
MW-X-122822	22L0642-07	Water	28-Dec-2022 01:00	29-Dec-2022 16:40
MW-X-122822	22L0642-08	Water	28-Dec-2022 01:00	29-Dec-2022 16:40
Trip Blank	22L0642-09	Water	28-Dec-2022 12:50	29-Dec-2022 16:40



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

Work Order Case Narrative

Client: Aspect Consulting, LLC.
Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Work Order: 22L0642

Sample receipt

Sample(s) as listed on the preceding page were received 29-Dec-2022 16:40 under ARI work order 22L0642. For details regarding sample receipt, please refer to the Cooler Receipt Form.

The bottle kit requested was for three samples plus four extra bottles per extraction method and six extra vials for volatile methods for the matrix spike/matrix spike duplicate (MS/MSD) analysis. Four samples were submitted. It is possible that the additional bottles/vials were used for this fourth sample. Without additional volume provided, MS/MSD was not performed for organics methods.

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except Aroclor 1260 which was out of control high in the continuing calibration verifications on column zb-5. Data reported from passing column zb-35.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

No extra volume was provided so MS/MSD was not performed.

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

No extra volume was provided so MS/MSD was not performed.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

No extra volume was provided so MS/MSD was not performed.

Semivolatiles - EPA Method SW8270E

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except Fluorene which was out of control low and 4-Nitrophenol which was out of control high in the initial calibration verification. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except Phenol-D5 and 2-Fluorophenol which were out of control low as flagged in the samples and associated QC.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits except as flagged.

No extra volume was provided so MS/MSD was not performed.



Aspect Consulting, LLC.
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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270E-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except Fluornathene-d10 which was out of control low in sample 22L0642-03RE1. The deviation has been flagged.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

No extra volume was provided so MS/MSD was not performed.

Total and Dissolved Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits except Dissolved Copper and Dissolved Lead. The deviations have been "B" qualified.

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Total and Dissolved Mercury - EPA Method 7470/7471

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

No extra volume was provided so MS/MSD was not performed.



Cooler Receipt Form

ARI Client: Aspect Consulting
COC No(s): _____ NA
Assigned ARI Job No: 22L0642

Project Name: King County Dinamish
Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO
Were custody papers included with the cooler? YES NO
Were custody papers properly filled out (ink, signed, etc.) YES NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1640 5:17 4:6 5:6 _____
If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: J0009708

Cooler Accepted by: JS Date: 12/29/22 Time: 1640

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
Was sufficient ice used (if appropriate)? NA YES NO
How were bottles sealed in plastic bags? Individually Grouped Not
Did all bottles arrive in good condition (unbroken)? YES NO
Were all bottle labels complete and legible? YES NO
Did the number of containers listed on COC match with the number of containers received? YES NO
Did all bottle labels and tags agree with custody papers? YES NO
Were all bottles used correct for the requested analyses? YES NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO
Were all VOC vials free of air bubbles? TS NA YES NO
Was sufficient amount of sample sent in each bottle? YES NO
Date VOC Trip Blank was made at ARI NA 12/22/22
Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JS Date: 12/29/22 Time: 8:28 Labels checked by: PJB

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



WORK ORDER

22L0642

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218-A-4500.04

22L0642-05 A	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 B	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 C	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 D	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 E	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 F	Glass NM, Amber, 500 mL	
22L0642-05 G	Glass NM, Amber, 500 mL	
22L0642-05 H	Glass NM, Amber, 500 mL	
22L0642-05 I	Glass NM, Amber, 500 mL	
22L0642-05 J	Glass NM, Amber, 500 mL	
22L0642-05 K	Glass NM, Amber, 500 mL	
22L0642-05 L	Glass NM, Amber, 1000 mL	
22L0642-05 M	Glass NM, Amber, 1000 mL	
22L0642-05 N	Glass NM, Amber, 1000 mL	
22L0642-05 O	Glass NM, Amber, 1000 mL	
22L0642-05 P	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 Pass
22L0642-07 A	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 B	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 C	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 D	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 E	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 F	Glass NM, Amber, 500 mL	
22L0642-07 G	Glass NM, Amber, 500 mL	
22L0642-07 H	Glass NM, Amber, 500 mL	
22L0642-07 I	Glass NM, Amber, 500 mL	
22L0642-07 J	Glass NM, Amber, 500 mL	
22L0642-07 K	Glass NM, Amber, 500 mL	
22L0642-07 L	Glass NM, Amber, 1000 mL	
22L0642-07 M	Glass NM, Amber, 1000 mL	
22L0642-07 N	Glass NM, Amber, 1000 mL	
22L0642-07 O	Glass NM, Amber, 1000 mL	
22L0642-07 P	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-07 Q	Miscellaneous Container	22 Fail
22L0642-08 A	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-08 B	Miscellaneous Container	22 Fail



WORK ORDER

22L0642

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218-A-4500.04

22L0642-05 A	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 B	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 C	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 D	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 E	VOA Vial, Clear, 40 mL, HCL	
22L0642-05 F	Glass NM, Amber, 500 mL	
22L0642-05 G	Glass NM, Amber, 500 mL	
22L0642-05 H	Glass NM, Amber, 500 mL	
22L0642-05 I	Glass NM, Amber, 500 mL	
22L0642-05 J	Glass NM, Amber, 500 mL	
22L0642-05 K	Glass NM, Amber, 500 mL	
22L0642-05 L	Glass NM, Amber, 1000 mL	
22L0642-05 M	Glass NM, Amber, 1000 mL	
22L0642-05 N	Glass NM, Amber, 1000 mL	
22L0642-05 O	Glass NM, Amber, 1000 mL	
22L0642-05 P	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 Pass
22L0642-07 A	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 B	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 C	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 D	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 E	VOA Vial, Clear, 40 mL, HCL	
22L0642-07 F	Glass NM, Amber, 500 mL	
22L0642-07 G	Glass NM, Amber, 500 mL	
22L0642-07 H	Glass NM, Amber, 500 mL	
22L0642-07 I	Glass NM, Amber, 500 mL	
22L0642-07 J	Glass NM, Amber, 500 mL	
22L0642-07 K	Glass NM, Amber, 500 mL	
22L0642-07 L	Glass NM, Amber, 1000 mL	
22L0642-07 M	Glass NM, Amber, 1000 mL	
22L0642-07 N	Glass NM, Amber, 1000 mL	
22L0642-07 O	Glass NM, Amber, 1000 mL	
22L0642-07 P	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-07 Q	Miscellaneous Container	22 Pass
22L0642-08 A	HDPE NM, 500 mL, 1:1 HNO3	L2 Pass
22L0642-08 B	Miscellaneous Container	22 Pass



WORK ORDER

22L0642

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

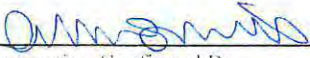
Project Manager: Shelly Fishel

Project: West Duwamish CSO


Project Number: 150218-A-4500.04

22L0642-09 A VOA Vial, Clear, 40 mL, HCL

22L0642-09 B VOA Vial, Clear, 40 mL, HCL



Preservation Confirmed By



Date



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-09-122922
22L0642-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/29/2022 09:25

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 16:16

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 22L0642-01 A

Preparation Batch: BLA0054

Sample Size: 10 mL

Prepared: 01/04/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>					80-120 %	98.2 %	
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	99.2 %	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218-A-4500.04 Project Manager: Ali Cochrane	Reported: 30-Jan-2023 13:22
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MW-09-122922
22L0642-01 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 12/29/2022 09:25
Instrument: NT3 Analyst: PKC Analyzed: 01/04/2023 16:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22L0642-01 A
Preparation Batch: BLA0054 Sample Size: 10 mL
Prepared: 01/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.2	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	99.2	%	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-09-122922
22L0642-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 12/29/2022 09:25

Instrument: NT10 Analyst: VTS

Analyzed: 01/27/2023 17:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKL0734
Prepared: 01/04/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22L0642-01 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-09-122922
22L0642-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 12/29/2022 09:25

Instrument: NT10 Analyst: VTS

Analyzed: 01/27/2023 17:08

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
Surrogate: 2-Fluorophenol				30-160 %	26.1	%	*
Surrogate: Phenol-d5				30-160 %	14.5	%	*
Surrogate: 2-Chlorophenol-d4				30-160 %	54.9	%	
Surrogate: 1,2-Dichlorobenzene-d4				30-160 %	46.3	%	



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-09-122922
22L0642-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 12/29/2022 09:25

Instrument: NT10 Analyst: VTS

Analyzed: 01/27/2023 17:08

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	64.0	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	60.7	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	66.1	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	70.1	%	



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Reported:
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MW-09-122922
22L0642-01 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 12/29/2022 09:25

Instrument: NT18 Analyst: VTS

Analyzed: 01/19/2023 15:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22L0642-01 F 01
Preparation Batch: BKL0731 Sample Size: 500 mL
Prepared: 01/04/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22L0642-01 F 01
Cleanup Batch: CLA0085 Initial Volume: 0.5 uL
Cleaned: 09-Jan-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.006	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.003	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.002	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	0.001	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 53.1 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 48.0 %

Surrogate: Fluoranthene-d10

57-120 % 69.6 %



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MW-09-122922
22L0642-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 12/29/2022 09:25
Instrument: FID4 Analyst: AA Analyzed: 01/10/2023 18:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22L0642-01 G 01
Preparation Batch: BKL0735 Sample Size: 500 mL
Prepared: 01/03/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	94.0	%	



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Project Manager: Ali Cochrane

Reported:
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MW-09-122922
22L0642-01 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 12/29/2022 09:25
Instrument: ECD7 Analyst: RJL Analyzed: 01/12/2023 09:09

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKL0732 Prepared: 01/04/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22L0642-01 L 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLA0102 Cleared: 11-Jan-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22L0642-01 L 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLA0100 Cleared: 11-Jan-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22L0642-01 L 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLA0101 Cleared: 11-Jan-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22L0642-01 L 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	88.7	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	72.5	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	87.3	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	70.4	%



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Reported:
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MW-09-122922
22L0642-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 12/29/2022 09:25

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/14/2023 01:36

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22L0642-01 P 01

Preparation Batch: BLA0298

Sample Size: 25 mL

Prepared: 01/12/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	0.0210	ug/L	J
Chromium	7440-47-3	2	0.520	1.00	0.694	ug/L	J, D
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-09-122922
22L0642-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 12/29/2022 09:25
Instrument: ICPMS2 Analyst: MCB Analyzed: 01/14/2023 01:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22L0642-01 P 01
Preparation Batch: BLA0298 Sample Size: 25 mL
Prepared: 01/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.65	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel	7440-02-0	1	0.0792	0.500	0.600	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-09-122922
22L0642-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 12/29/2022 09:25
Instrument: HYDRA Analyst: ML Analyzed: 01/17/2023 13:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22L0642-01 P
Preparation Batch: BLA0294 Sample Size: 20 mL
Prepared: 01/12/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-09-122922
22L0642-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 12/29/2022 09:25
Instrument: ICPMS2 Analyst: MCB Analyzed: 01/14/2023 00:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22L0642-02 A 01
Preparation Batch: BLA0300 Sample Size: 25 mL
Prepared: 01/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0250	ug/L	J
Chromium, Dissolved	7440-47-3	2	0.520	1.00	0.896	ug/L	J, D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	B, U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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Reported:
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MW-09-122922
22L0642-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED

Sampled: 12/29/2022 09:25

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/14/2023 00:13

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22L0642-02 A 01

Preparation Batch: BLA0300

Sample Size: 25 mL

Prepared: 01/12/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.68	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	B, U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.566	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-09-122922
22L0642-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 12/29/2022 09:25
Instrument: HYDRA Analyst: ML Analyzed: 01/17/2023 13:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22L0642-02 A
Preparation Batch: BLA0293 Sample Size: 20 mL
Prepared: 01/12/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project Number: 150218-A-4500.04
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Reported:
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MW-10-122822
22L0642-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 15:45

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 16:38

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 22L0642-03 B

Preparation Batch: BLA0054

Sample Size: 10 mL

Prepared: 01/04/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>				<i>80-120 %</i>	<i>102</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>96.3</i>	<i>%</i>	



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MW-10-122822
22L0642-03 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 12/28/2022 15:45
Instrument: NT3 Analyst: PKC Analyzed: 01/04/2023 16:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22L0642-03 B
Preparation Batch: BLA0054 Sample Size: 10 mL
Prepared: 01/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	102	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	96.3	%	



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Project Manager: Ali Cochrane

Reported:
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MW-10-122822
22L0642-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 12/28/2022 15:45

Instrument: NT10 Analyst: VTS

Analyzed: 01/27/2023 17:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKL0734
Prepared: 01/04/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22L0642-03 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	1.9	ug/L	



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Project Number: 150218-A-4500.04
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Reported:
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MW-10-122822
22L0642-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 12/28/2022 15:45

Instrument: NT10 Analyst: VTS

Analyzed: 01/27/2023 17:47

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	31.9 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	18.1 %	*
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	64.4 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	54.3 %	



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-10-122822
22L0642-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 12/28/2022 15:45

Instrument: NT10 Analyst: VTS

Analyzed: 01/27/2023 17:47

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	74.5	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	71.0	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	80.8	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	86.1	%	



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Reported:
30-Jan-2023 13:22

MW-10-122822
22L0642-03 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 12/28/2022 15:45

Instrument: NT18 Analyst: VTS

Analyzed: 01/19/2023 15:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22L0642-03 F 01
Preparation Batch: BKL0731 Sample Size: 500 mL
Prepared: 01/04/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22L0642-03 F 01
Cleanup Batch: CLA0085 Initial Volume: 0.5 uL
Cleaned: 09-Jan-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.007	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.003	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	1.91	ug/L	E
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	0.002	ug/L	J
Phenanthrene	85-01-8	1	0.001	0.010	0.003	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	0.001	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 53.5 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 42.5 %

Surrogate: Fluoranthene-d10

57-120 % 58.8 %



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MW-10-122822
22L0642-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 12/28/2022 15:45
Instrument: FID4 Analyst: AA Analyzed: 01/10/2023 18:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22L0642-03 G 01
Preparation Batch: BKL0735 Sample Size: 500 mL
Prepared: 01/03/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	93.1	%	



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Reported:
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MW-10-122822
22L0642-03 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 12/28/2022 15:45
Instrument: ECD7 Analyst: RJL Analyzed: 01/12/2023 09:30

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKL0732 Prepared: 01/04/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22L0642-03 L 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLA0102 Cleaned: 11-Jan-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22L0642-03 L 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLA0100 Cleaned: 11-Jan-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22L0642-03 L 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLA0101 Cleaned: 11-Jan-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22L0642-03 L 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	81.4	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	60.3	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	79.1	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	57.4	%



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MW-10-122822
22L0642-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 12/28/2022 15:45
Instrument: ICPMS2 Analyst: MCB Analyzed: 01/13/2023 23:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22L0642-03 P 01
Preparation Batch: BLA0298 Sample Size: 25 mL
Prepared: 01/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	0.560	ug/L	
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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Reported:
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MW-10-122822
22L0642-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 12/28/2022 15:45

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/13/2023 23:51

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22L0642-03 P 01

Preparation Batch: BLA0298

Sample Size: 25 mL

Prepared: 01/12/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	2.03	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel	7440-02-0	1	0.0792	0.500	0.579	ug/L	
Selenium	7782-49-2	1	0.179	0.500	0.880	ug/L	
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-10-122822
22L0642-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 12/28/2022 15:45
Instrument: HYDRA Analyst: ML Analyzed: 01/17/2023 14:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22L0642-03 P
Preparation Batch: BLA0294 Sample Size: 20 mL
Prepared: 01/12/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Reported:
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MW-10-122822
22L0642-03RE1 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 12/28/2022 15:45

Instrument: NT18 Analyst: VTS

Analyzed: 01/24/2023 13:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22L0642-03RE1 F 01
Preparation Batch: BKL0731 Sample Size: 500 mL
Prepared: 01/04/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22L0642-03RE1 F 01
Cleanup Batch: CLA0085 Initial Volume: 0.5 uL
Cleaned: 09-Jan-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	5	0.007	0.050	ND	ug/L	U
2-Methylnaphthalene	91-57-6	5	0.005	0.050	ND	ug/L	U
1-Methylnaphthalene	90-12-0	5	0.005	0.050	ND	ug/L	U
Acenaphthylene	208-96-8	5	0.009	0.050	ND	ug/L	U
Acenaphthene	83-32-9	5	0.014	0.050	1.44	ug/L	D
Dibenzofuran	132-64-9	5	0.008	0.050	ND	ug/L	U
Fluorene	86-73-7	5	0.008	0.050	ND	ug/L	U
Phenanthrene	85-01-8	5	0.007	0.050	ND	ug/L	U
Anthracene	120-12-7	5	0.006	0.050	ND	ug/L	U
Carbazole	86-74-8	5	0.006	0.050	ND	ug/L	U
Fluoranthene	206-44-0	5	0.009	0.050	ND	ug/L	U
Pyrene	129-00-0	5	0.006	0.050	ND	ug/L	U
Benzo(a)anthracene	56-55-3	5	0.004	0.050	ND	ug/L	U
Chrysene	218-01-9	5	0.005	0.050	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	5	0.002	0.050	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	5	0.016	0.050	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	5	0.009	0.050	ND	ug/L	U
Benzofluoranthenes, Total		5	0.018	0.050	ND	ug/L	U
Benzo(a)pyrene	50-32-8	5	0.012	0.050	ND	ug/L	U
Perylene	198-55-0	5	0.029	0.050	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	5	0.005	0.050	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	5	0.007	0.050	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	5	0.007	0.050	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 44.2 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 30.9 %

Surrogate: Fluoranthene-d10

57-120 % 43.3 % *



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Reported:
30-Jan-2023 13:22

MW-10-122822
22L0642-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B

Sampled: 12/28/2022 15:45

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/13/2023 23:46

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22L0642-04 A 01

Preparation Batch: BLA0300

Sample Size: 25 mL

Prepared: 01/12/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	1	0.260	0.500	0.627	ug/L	
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	B, U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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Reported:
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MW-10-122822
22L0642-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED

Sampled: 12/28/2022 15:45

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/13/2023 23:46

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22L0642-04 A 01

Preparation Batch: BLA0300

Sample Size: 25 mL

Prepared: 01/12/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.72	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.228	ug/L	B, J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.584	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.812	ug/L	
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-10-122822
22L0642-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 12/28/2022 15:45
Instrument: HYDRA Analyst: ML Analyzed: 01/17/2023 13:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22L0642-04 A
Preparation Batch: BLA0293 Sample Size: 20 mL
Prepared: 01/12/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Reported:
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MW-11-122822
22L0642-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 12:50

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 17:00

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 22L0642-05 A

Preparation Batch: BLA0054

Sample Size: 10 mL

Prepared: 01/04/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>					80-120 %	98.0 %	
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	99.2 %	



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MW-11-122822
22L0642-05 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 12/28/2022 12:50
Instrument: NT3 Analyst: PKC Analyzed: 01/04/2023 17:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22L0642-05 A
Preparation Batch: BLA0054 Sample Size: 10 mL
Prepared: 01/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.0	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	99.2	%	



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Reported:
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MW-11-122822
22L0642-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 12/28/2022 12:50

Instrument: NT10 Analyst: VTS

Analyzed: 01/27/2023 18:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKL0734
Prepared: 01/04/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22L0642-05 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-11-122822
22L0642-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 12/28/2022 12:50

Instrument: NT10 Analyst: VTS

Analyzed: 01/27/2023 18:25

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	22.4 %	*
<i>Surrogate: Phenol-d5</i>					30-160 %	14.3 %	*
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	42.8 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	37.2 %	



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-11-122822
22L0642-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 12/28/2022 12:50

Instrument: NT10 Analyst: VTS

Analyzed: 01/27/2023 18:25

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	51.0	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	50.4	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	58.3	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	66.7	%	



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Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-11-122822
22L0642-05 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 12/28/2022 12:50

Instrument: NT18 Analyst: VTS

Analyzed: 01/19/2023 16:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22L0642-05 F 01
Preparation Batch: BKL0731 Sample Size: 500 mL
Prepared: 01/04/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 22L0642-05 F 01
Cleanup Batch: CLA0085 Initial Volume: 0.5 uL
Cleaned: 09-Jan-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.008	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	0.013	ug/L	
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.002	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	0.002	ug/L	J
Pyrene	129-00-0	1	0.001	0.010	0.002	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	0.0009	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.0005	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 50.6 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 44.8 %
Surrogate: Fluoranthene-d10 57-120 % 67.2 %



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MW-11-122822
22L0642-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 12/28/2022 12:50
Instrument: FID4 Analyst: AA Analyzed: 01/10/2023 19:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22L0642-05 G 01
Preparation Batch: BKL0735 Sample Size: 500 mL
Prepared: 01/03/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	104	%	



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Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
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MW-11-122822
22L0642-05 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 12/28/2022 12:50
Instrument: ECD7 Analyst: RJL Analyzed: 01/12/2023 09:51

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKL0732 Prepared: 01/04/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22L0642-05 L 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLA0102 Cleaned: 11-Jan-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22L0642-05 L 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLA0100 Cleaned: 11-Jan-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22L0642-05 L 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLA0101 Cleaned: 11-Jan-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22L0642-05 L 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	86.3	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	57.8	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	79.3	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	54.6	%



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MW-11-122822
22L0642-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 12/28/2022 12:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 01/13/2023 23:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22L0642-05 P 01
Preparation Batch: BLA0298 Sample Size: 25 mL
Prepared: 01/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	0.0290	ug/L	J
Chromium	7440-47-3	1	0.260	0.500	0.868	ug/L	
Lead	7439-92-1	1	0.0513	0.100	0.0540	ug/L	J
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-11-122822
22L0642-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 12/28/2022 12:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 01/13/2023 23:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22L0642-05 P 01
Preparation Batch: BLA0298 Sample Size: 25 mL
Prepared: 01/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.03	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel	7440-02-0	1	0.0792	0.500	0.368	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.614	ug/L	
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-11-122822
22L0642-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 12/28/2022 12:50
Instrument: HYDRA Analyst: ML Analyzed: 01/17/2023 14:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22L0642-05 P
Preparation Batch: BLA0294 Sample Size: 20 mL
Prepared: 01/12/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-11-122822
22L0642-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 12/28/2022 12:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 01/14/2023 01:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22L0642-06 A 01
Preparation Batch: BLA0300 Sample Size: 25 mL
Prepared: 01/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0260	ug/L	J
Chromium, Dissolved	7440-47-3	2	0.520	1.00	0.972	ug/L	J, D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	B, U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-11-122822
22L0642-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 12/28/2022 12:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 01/14/2023 01:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22L0642-06 A 01
Preparation Batch: BLA0300 Sample Size: 25 mL
Prepared: 01/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.02	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	B, U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.398	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.287	ug/L	J
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-11-122822
22L0642-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 12/28/2022 12:50
Instrument: HYDRA Analyst: ML Analyzed: 01/17/2023 13:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22L0642-06 A
Preparation Batch: BLA0293 Sample Size: 20 mL
Prepared: 01/12/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project Number: 150218-A-4500.04
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Reported:
30-Jan-2023 13:22

MW-X-122822
22L0642-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 12/28/2022 01:00

Instrument: NT3 Analyst: PKC

Analyzed: 01/04/2023 17:22

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 22L0642-07 E

Preparation Batch: BLA0054

Sample Size: 10 mL

Prepared: 01/04/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>					80-120 %	101	%
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	96.4	%



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MW-X-122822
22L0642-07 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 12/28/2022 01:00
Instrument: NT3 Analyst: PKC Analyzed: 01/04/2023 17:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22L0642-07 E
Preparation Batch: BLA0054 Sample Size: 10 mL
Prepared: 01/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	96.4	%	



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Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-X-122822
22L0642-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 12/28/2022 01:00

Instrument: NT10 Analyst: VTS

Analyzed: 01/27/2023 19:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKL0734
Prepared: 01/04/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 22L0642-07 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-X-122822
22L0642-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 12/28/2022 01:00

Instrument: NT10 Analyst: VTS

Analyzed: 01/27/2023 19:04

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
Surrogate: 2-Fluorophenol				30-160 %	25.3	%	*
Surrogate: Phenol-d5				30-160 %	14.5	%	*
Surrogate: 2-Chlorophenol-d4				30-160 %	51.2	%	
Surrogate: 1,2-Dichlorobenzene-d4				30-160 %	45.8	%	



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Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-X-122822
22L0642-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 12/28/2022 01:00

Instrument: NT10 Analyst: VTS

Analyzed: 01/27/2023 19:04

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	65.5	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	60.1	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	68.4	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	75.4	%	



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Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-X-122822
22L0642-07 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 12/28/2022 01:00

Instrument: NT18 Analyst: VTS

Analyzed: 01/19/2023 16:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BKL0731
Prepared: 01/04/2023

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 22L0642-07 F 01

Sample Cleanup: Cleanup Method: Silica Gel
Cleanup Batch: CLA0085
Cleaned: 09-Jan-2023

Initial Volume: 0.5 uL
Final Volume: 0.5 uL

Extract ID: 22L0642-07 F 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.008	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	0.013	ug/L	
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.002	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	0.002	ug/L	J
Pyrene	129-00-0	1	0.001	0.010	0.002	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.0005	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 54.0 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 46.7 %

Surrogate: Fluoranthene-d10

57-120 % 69.0 %



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MW-X-122822
22L0642-07 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 12/28/2022 01:00
Instrument: FID4 Analyst: AA Analyzed: 01/10/2023 20:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 22L0642-07 G 01
Preparation Batch: BKL0735 Sample Size: 500 mL
Prepared: 01/03/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	102	%	



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Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
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MW-X-122822
22L0642-07 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 12/28/2022 01:00
Instrument: ECD7 Analyst: RJL Analyzed: 01/12/2023 10:12

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BKL0732 Prepared: 01/04/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 22L0642-07 L 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLA0102 Cleaned: 11-Jan-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22L0642-07 L 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLA0100 Cleaned: 11-Jan-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22L0642-07 L 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLA0101 Cleaned: 11-Jan-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 22L0642-07 L 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	86.3	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	57.6	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	79.2	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	54.9	%



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MW-X-122822
22L0642-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 12/28/2022 01:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 01/17/2023 20:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22L0642-07 P 01
Preparation Batch: BLA0298 Sample Size: 25 mL
Prepared: 01/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	0.0240	ug/L	J
Chromium	7440-47-3	2	0.520	1.00	0.962	ug/L	J, D
Lead	7439-92-1	1	0.0513	0.100	0.0740	ug/L	J
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

MW-X-122822
22L0642-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 12/28/2022 01:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 01/17/2023 20:07

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 22L0642-07 P 01

Preparation Batch: BLA0298

Sample Size: 25 mL

Prepared: 01/12/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.995	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.228	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.322	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.423	ug/L	J
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-X-122822
22L0642-07 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 12/28/2022 01:00
Instrument: HYDRA Analyst: ML Analyzed: 01/17/2023 14:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22L0642-07 Q
Preparation Batch: BLA0294 Sample Size: 20 mL
Prepared: 01/12/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-X-122822
22L0642-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 12/28/2022 01:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 01/14/2023 01:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22L0642-08 A 01
Preparation Batch: BLA0300 Filtration Batch: BKL0742
Prepared: 01/12/2023 Final Volume: 25 mL
Filtration Date: 12/30/2022 17:39

Analyte	CAS Number	Dilution	Detection		Reporting		Result	Units	Notes
			Limit	Limit	Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U		
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0260	ug/L	J		
Chromium, Dissolved	7440-47-3	2	0.520	1.00	0.982	ug/L	J, D		
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	B, U		
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U		
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U		



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218-A-4500.04 Project Manager: Ali Cochrane	Reported: 30-Jan-2023 13:22
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MW-X-122822
22L0642-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 12/28/2022 01:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 01/14/2023 01:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 22L0642-08 A 01
Preparation Batch: BLA0300 Filtration Batch: BKL0742
Prepared: 01/12/2023 Final Volume: 25 mL
Filtration Date: 12/30/2022 17:39

Analyte	CAS Number	Dilution	Detection		Reporting		Result	Units	Notes
			Limit	Limit	Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.04	ug/L			
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U		
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	B, U		
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.417	ug/L	J		
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.354	ug/L	J		
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U		



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218-A-4500.04 Project Manager: Ali Cochrane	Reported: 30-Jan-2023 13:22
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MW-X-122822
22L0642-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 12/28/2022 01:00
Instrument: HYDRA Analyst: ML Analyzed: 01/17/2023 13:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 22L0642-08 A
Preparation Batch: BLA0293 Filtration Batch: BKL0742
Prepared: 01/12/2023 Final Volume: 20 mL Filtration Date: 12/30/2022 17:39

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218-A-4500.04 Project Manager: Ali Cochrane	Reported: 30-Jan-2023 13:22
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Trip Blank
22L0642-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 12/28/2022 12:50
Instrument: NT3 Analyst: PKC Analyzed: 01/04/2023 13:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22L0642-09 B
Preparation Batch: BLA0054 Sample Size: 10 mL
Prepared: 01/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>				<i>80-120 %</i>	<i>98.2</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>97.3</i>	<i>%</i>	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218-A-4500.04 Project Manager: Ali Cochrane	Reported: 30-Jan-2023 13:22
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Trip Blank
22L0642-09 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 12/28/2022 12:50
Instrument: NT3 Analyst: PKC Analyzed: 01/04/2023 13:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 22L0642-09 B
Preparation Batch: BLA0054 Sample Size: 10 mL
Prepared: 01/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.2	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	97.3	%	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLA0054 - NWTPhg

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLA0054-BLK1)		Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 12:28								
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	5.02		ug/L	5.00		100	80-120			
Surrogate: 4-Bromofluorobenzene	4.97		ug/L	5.00		99.4	80-120			
Blank (BLA0054-BLK2)		Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 12:28								
Benzene	ND	0.05	0.20	ug/L						U
Toluene	ND	0.05	0.20	ug/L						U
Ethylbenzene	ND	0.05	0.20	ug/L						U
m,p-Xylene	ND	0.14	0.40	ug/L						U
o-Xylene	ND	0.08	0.20	ug/L						U
Surrogate: Toluene-d8	5.02		ug/L	5.00		100	80-120			
Surrogate: 4-Bromofluorobenzene	4.97		ug/L	5.00		99.4	80-120			
LCS (BLA0054-BS1)		Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 10:37								
Gasoline Range Organics (Tol-Nap)	1080	100	ug/L	1000		108	72-128			
Surrogate: Toluene-d8	5.05		ug/L	5.00		101	80-120			
Surrogate: 4-Bromofluorobenzene	4.92		ug/L	5.00		98.5	80-120			
LCS (BLA0054-BS2)		Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 10:59								
Benzene	9.04	0.05	0.20	ug/L	10.0	90.4	80-120			
Toluene	8.91	0.05	0.20	ug/L	10.0	89.1	80-120			
Ethylbenzene	8.78	0.05	0.20	ug/L	10.0	87.8	80-120			
m,p-Xylene	18.6	0.14	0.40	ug/L	20.0	93.0	80-121			
o-Xylene	8.97	0.08	0.20	ug/L	10.0	89.7	80-121			
Surrogate: Toluene-d8	5.17		ug/L	5.00		103	80-120			
Surrogate: 4-Bromofluorobenzene	4.92		ug/L	5.00		98.3	80-120			
LCS Dup (BLA0054-BSD1)		Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 11:21								
Gasoline Range Organics (Tol-Nap)	1020	100	ug/L	1000		102	72-128	5.69	30	
Surrogate: Toluene-d8	4.95		ug/L	5.00		98.9	80-120			
Surrogate: 4-Bromofluorobenzene	4.90		ug/L	5.00		97.9	80-120			
LCS Dup (BLA0054-BSD2)		Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 11:43								
Benzene	10.1	0.05	0.20	ug/L	10.0	101	80-120	11.40	30	



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30-Jan-2023 13:22

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLA0054 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLA0054-BSD2)						Prepared: 04-Jan-2023 Analyzed: 04-Jan-2023 11:43					
Toluene	10.1	0.05	0.20	ug/L	10.0		101	80-120	12.60	30	
Ethylbenzene	9.85	0.05	0.20	ug/L	10.0		98.5	80-120	11.50	30	
m,p-Xylene	20.8	0.14	0.40	ug/L	20.0		104	80-121	11.30	30	
o-Xylene	10.1	0.08	0.20	ug/L	10.0		101	80-121	12.00	30	
Surrogate: Toluene-d8	5.12			ug/L	5.00		102	80-120			
Surrogate: 4-Bromofluorobenzene	4.83			ug/L	5.00		96.6	80-120			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKL0734 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0734-BLK1)						Prepared: 04-Dec-2022 Analyzed: 27-Jan-2023 15:13					
Phenol	ND	0.01	0.2	ug/L							U
bis(2-chloroethyl) ether	ND	0.03	0.2	ug/L							U
2-Chlorophenol	ND	0.03	0.2	ug/L							U
1,3-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,4-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,2-Dichlorobenzene	ND	0.03	0.2	ug/L							U
Benzyl Alcohol	ND	0.02	0.2	ug/L							U
2,2'-Oxybis(1-chloropropane)	ND	0.03	0.2	ug/L							U
2-Methylphenol	ND	0.03	0.2	ug/L							U
Hexachloroethane	ND	0.04	0.2	ug/L							U
N-Nitroso-di-n-Propylamine	ND	0.04	0.2	ug/L							U
4-Methylphenol	ND	0.03	0.2	ug/L							U
Nitrobenzene	ND	0.03	0.2	ug/L							U
Isophorone	ND	0.03	0.2	ug/L							U
2-Nitrophenol	ND	0.04	1.0	ug/L							U
2,4-Dimethylphenol	ND	0.3	1.0	ug/L							U
Bis(2-Chloroethoxy)methane	ND	0.03	0.2	ug/L							U
2,4-Dichlorophenol	ND	0.1	1.0	ug/L							U
1,2,4-Trichlorobenzene	ND	0.03	0.2	ug/L							U
Naphthalene	ND	0.03	0.2	ug/L							U
Benzoic acid	ND	0.1	2.0	ug/L							U
4-Chloroaniline	ND	0.04	1.0	ug/L							U
Hexachlorobutadiene	ND	0.04	0.2	ug/L							U
4-Chloro-3-Methylphenol	ND	0.1	1.0	ug/L							U
2-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Hexachlorocyclopentadiene	ND	0.1	1.0	ug/L							U
2,4,6-Trichlorophenol	ND	0.2	1.0	ug/L							U
2,4,5-Trichlorophenol	ND	0.1	1.0	ug/L							U
2-Chloronaphthalene	ND	0.03	0.2	ug/L							U
2-Nitroaniline	ND	0.2	1.0	ug/L							U
Acenaphthylene	ND	0.02	0.2	ug/L							U
Dimethylphthalate	ND	0.04	0.2	ug/L							U
2,6-Dinitrotoluene	ND	0.2	1.0	ug/L							U
Acenaphthene	ND	0.03	0.2	ug/L							U
3-Nitroaniline	ND	0.2	1.0	ug/L							U



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Semivolatile Organic Compounds - Quality Control

Batch BKL0734 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0734-BLK1)											
						Prepared: 04-Dec-2022 Analyzed: 27-Jan-2023 15:13					
2,4-Dinitrophenol	ND	0.2	2.0	ug/L							U
Dibenzofuran	ND	0.02	0.2	ug/L							U
4-Nitrophenol	ND	0.06	1.0	ug/L							U
2,4-Dinitrotoluene	ND	0.1	1.0	ug/L							U
Fluorene	ND	0.02	0.2	ug/L							U
4-Chlorophenylphenyl ether	ND	0.02	0.2	ug/L							U
Diethyl phthalate	ND	0.06	0.2	ug/L							U
4-Nitroaniline	ND	0.2	1.0	ug/L							U
4,6-Dinitro-2-methylphenol	ND	0.4	2.0	ug/L							U
N-Nitrosodiphenylamine	ND	0.03	0.2	ug/L							U
4-Bromophenyl phenyl ether	ND	0.02	0.2	ug/L							U
Hexachlorobenzene	ND	0.04	0.2	ug/L							U
Pentachlorophenol	ND	0.1	1.0	ug/L							U
Phenanthrene	ND	0.02	0.2	ug/L							U
Anthracene	ND	0.03	0.2	ug/L							U
Carbazole	ND	0.04	0.2	ug/L							U
Di-n-Butylphthalate	ND	0.05	0.2	ug/L							U
Fluoranthene	ND	0.03	0.2	ug/L							U
Pyrene	ND	0.03	0.2	ug/L							U
Butylbenzylphthalate	ND	0.07	0.2	ug/L							U
Benzo(a)anthracene	ND	0.04	0.2	ug/L							U
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L							U
Chrysene	ND	0.04	0.2	ug/L							U
bis(2-Ethylhexyl)phthalate	ND	0.2	0.2	ug/L							U
Di-n-Octylphthalate	ND	0.05	0.2	ug/L							U
Benzo(a)fluoranthene, Total	ND	0.08	0.4	ug/L							U
Benzo(a)pyrene	ND	0.05	0.2	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.06	0.2	ug/L							U
Dibenzo(a,h)anthracene	ND	0.07	0.2	ug/L							U
Benzo(g,h,i)perylene	ND	0.04	0.2	ug/L							U
1-Methylnaphthalene	ND	0.03	0.2	ug/L							U
<i>Surrogate: 2-Fluorophenol</i>	2.84			ug/L	7.50		37.9	30-160			
<i>Surrogate: Phenol-d5</i>	1.85			ug/L	7.50		24.6	30-160			*
<i>Surrogate: 2-Chlorophenol-d4</i>	4.59			ug/L	7.50		61.2	30-160			



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Analysis by: Analytical Resources, LLC

Semivolatle Organic Compounds - Quality Control

Batch BKL0734 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0734-BLK1)						Prepared: 04-Dec-2022 Analyzed: 27-Jan-2023 15:13					
Surrogate: 1,2-Dichlorobenzene-d4	2.69			ug/L	5.00		53.7	30-160			
Surrogate: Nitrobenzene-d5	3.43			ug/L	5.00		68.6	30-160			
Surrogate: 2-Fluorobiphenyl	3.26			ug/L	5.00		65.1	30-160			
Surrogate: 2,4,6-Tribromophenol	4.22			ug/L	7.50		56.3	30-160			
Surrogate: p-Terphenyl-d14	4.07			ug/L	5.00		81.5	30-160			
LCS (BKL0734-BS1)						Prepared: 04-Dec-2022 Analyzed: 27-Jan-2023 15:51					
Phenol	1.3	0.01	0.2	ug/L	5.00		25.9	30-160			*
bis(2-chloroethyl) ether	3.4	0.03	0.2	ug/L	5.00		67.6	30-160			
2-Chlorophenol	2.8	0.03	0.2	ug/L	5.00		56.6	30-160			
1,3-Dichlorobenzene	2.7	0.03	0.2	ug/L	5.00		54.9	30-160			
1,4-Dichlorobenzene	2.8	0.03	0.2	ug/L	5.00		55.6	30-160			
1,2-Dichlorobenzene	2.8	0.03	0.2	ug/L	5.00		55.8	30-160			
Benzyl Alcohol	2.4	0.02	0.2	ug/L	5.00		48.3	30-160			
2,2'-Oxybis(1-chloropropane)	3.7	0.03	0.2	ug/L	5.00		73.8	30-160			
2-Methylphenol	2.3	0.03	0.2	ug/L	5.00		46.4	30-160			
Hexachloroethane	2.7	0.04	0.2	ug/L	5.00		53.5	30-160			
N-Nitroso-di-n-Propylamine	3.5	0.04	0.2	ug/L	5.00		70.8	30-160			
4-Methylphenol	2.3	0.03	0.2	ug/L	5.00		46.5	30-160			
Nitrobenzene	3.5	0.03	0.2	ug/L	5.00		70.5	30-160			
Isophorone	5.3	0.03	0.2	ug/L	5.00		105	30-160			
2-Nitrophenol	2.9	0.04	1.0	ug/L	5.00		58.1	30-160			
2,4-Dimethylphenol	7.9	0.3	1.0	ug/L	13.0		61.0	30-160			
Bis(2-Chloroethoxy)methane	4.2	0.03	0.2	ug/L	5.00		84.1	30-160			
2,4-Dichlorophenol	11.0	0.1	1.0	ug/L	13.0		84.6	30-160			
1,2,4-Trichlorobenzene	2.8	0.03	0.2	ug/L	5.00		56.5	30-160			
Naphthalene	3.2	0.03	0.2	ug/L	5.00		63.5	30-160			
Benzoic acid	7.6	0.1	2.0	ug/L	23.0		33.0	30-160			
4-Chloroaniline	1.5	0.04	1.0	ug/L	13.0		11.9	30-160			*
Hexachlorobutadiene	2.8	0.04	0.2	ug/L	5.00		56.0	30-160			
4-Chloro-3-Methylphenol	11.9	0.1	1.0	ug/L	13.0		91.9	30-160			
2-Methylnaphthalene	3.0	0.03	0.2	ug/L	5.00		59.2	30-160			
Hexachlorocyclopentadiene	9.2	0.1	1.0	ug/L	13.0		70.9	30-160			
2,4,6-Trichlorophenol	11.9	0.2	1.0	ug/L	13.0		91.3	30-160			
2,4,5-Trichlorophenol	11.5	0.1	1.0	ug/L	13.0		88.4	30-160			



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Reported:
30-Jan-2023 13:22

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKL0734 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKL0734-BS1)						Prepared: 04-Dec-2022 Analyzed: 27-Jan-2023 15:51					
2-Chloronaphthalene	3.2	0.03	0.2	ug/L	5.00		64.7	30-160			
2-Nitroaniline	14.3	0.2	1.0	ug/L	13.0		110	30-160			
Acenaphthylene	3.5	0.02	0.2	ug/L	5.00		69.2	30-160			
Dimethylphthalate	3.9	0.04	0.2	ug/L	5.00		78.9	30-160			
2,6-Dinitrotoluene	14.1	0.2	1.0	ug/L	13.0		108	30-160			
Acenaphthene	3.5	0.03	0.2	ug/L	5.00		70.8	30-160			
3-Nitroaniline	11.5	0.2	1.0	ug/L	13.0		88.7	30-160			
2,4-Dinitrophenol	19.7	0.2	2.0	ug/L	23.0		85.7	30-160			
Dibenzofuran	3.5	0.02	0.2	ug/L	5.00		69.1	30-160			
4-Nitrophenol	5.8	0.06	1.0	ug/L	13.0		44.7	30-160			Q
2,4-Dinitrotoluene	14.1	0.1	1.0	ug/L	13.0		109	30-160			
Fluorene	2.5	0.02	0.2	ug/L	5.00		50.5	30-160			Q
4-Chlorophenylphenyl ether	3.8	0.02	0.2	ug/L	5.00		75.5	30-160			
Diethyl phthalate	4.1	0.06	0.2	ug/L	5.00		82.5	30-160			
4-Nitroaniline	11.0	0.2	1.0	ug/L	13.0		85.0	30-160			
4,6-Dinitro-2-methylphenol	24.4	0.4	2.0	ug/L	23.0		106	30-160			
N-Nitrosodiphenylamine	3.5	0.03	0.2	ug/L	5.00		69.4	30-160			
4-Bromophenyl phenyl ether	3.7	0.02	0.2	ug/L	5.00		74.1	30-160			
Hexachlorobenzene	3.6	0.04	0.2	ug/L	5.00		71.6	30-160			
Pentachlorophenol	13.0	0.1	1.0	ug/L	13.0		99.6	30-160			
Phenanthrene	3.6	0.02	0.2	ug/L	5.00		72.9	30-160			
Anthracene	3.1	0.03	0.2	ug/L	5.00		62.8	30-160			
Carbazole	3.6	0.04	0.2	ug/L	5.00		71.4	30-160			
Di-n-Butylphthalate	4.0	0.05	0.2	ug/L	5.00		79.3	30-160			
Fluoranthene	3.8	0.03	0.2	ug/L	5.00		76.1	30-160			
Pyrene	3.8	0.03	0.2	ug/L	5.00		76.8	30-160			
Butylbenzylphthalate	4.0	0.07	0.2	ug/L	5.00		79.4	30-160			
Benzo(a)anthracene	3.8	0.04	0.2	ug/L	5.00		75.4	30-160			
3,3'-Dichlorobenzidine	10.0	0.3	1.0	ug/L	13.0		76.9	30-160			
Chrysene	3.8	0.04	0.2	ug/L	5.00		76.2	30-160			
bis(2-Ethylhexyl)phthalate	4.0	0.2	0.2	ug/L	5.00		79.1	30-160			
Di-n-Octylphthalate	3.9	0.05	0.2	ug/L	5.00		77.2	30-160			
Benzo(a)fluoranthene, Total	7.9	0.08	0.4	ug/L	10.0		78.9	30-160			
Benzo(a)pyrene	3.8	0.05	0.2	ug/L	5.00		75.3	30-160			
Indeno(1,2,3-cd)pyrene	3.9	0.06	0.2	ug/L	5.00		77.2	30-160			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKL0734 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKL0734-BS1)						Prepared: 04-Dec-2022 Analyzed: 27-Jan-2023 15:51					
Dibenzo(a,h)anthracene	3.9	0.07	0.2	ug/L	5.00		78.5	30-160			
Benzo(g,h,i)perylene	3.8	0.04	0.2	ug/L	5.00		76.6	30-160			
1-Methylnaphthalene	3.0	0.03	0.2	ug/L	5.00		61.0	30-160			
Surrogate: 2-Fluorophenol	3.29			ug/L	7.50		43.8	30-160			
Surrogate: Phenol-d5	2.11			ug/L	7.50		28.1	30-160			*
Surrogate: 2-Chlorophenol-d4	4.98			ug/L	7.50		66.4	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	2.91			ug/L	5.00		58.1	30-160			
Surrogate: Nitrobenzene-d5	3.60			ug/L	5.00		71.9	30-160			
Surrogate: 2-Fluorobiphenyl	3.45			ug/L	5.00		69.0	30-160			
Surrogate: 2,4,6-Tribromophenol	6.07			ug/L	7.50		80.9	30-160			
Surrogate: p-Terphenyl-d14	4.01			ug/L	5.00		80.2	30-160			
LCS Dup (BKL0734-BSD1)						Prepared: 04-Dec-2022 Analyzed: 27-Jan-2023 16:30					
Phenol	0.9	0.01	0.2	ug/L	5.00		18.8	30-160	31.60	30	*
bis(2-chloroethyl) ether	3.5	0.03	0.2	ug/L	5.00		70.4	30-160	4.13	30	
2-Chlorophenol	2.9	0.03	0.2	ug/L	5.00		57.6	30-160	1.89	30	
1,3-Dichlorobenzene	2.3	0.03	0.2	ug/L	5.00		45.4	30-160	19.00	30	
1,4-Dichlorobenzene	2.4	0.03	0.2	ug/L	5.00		47.0	30-160	16.70	30	
1,2-Dichlorobenzene	2.4	0.03	0.2	ug/L	5.00		48.6	30-160	13.80	30	
Benzyl Alcohol	1.9	0.02	0.2	ug/L	5.00		38.5	30-160	22.50	30	
2,2'-Oxybis(1-chloropropane)	3.9	0.03	0.2	ug/L	5.00		78.4	30-160	6.05	30	
2-Methylphenol	2.1	0.03	0.2	ug/L	5.00		43.0	30-160	7.73	30	
Hexachloroethane	2.1	0.04	0.2	ug/L	5.00		41.1	30-160	26.10	30	
N-Nitroso-di-n-Propylamine	3.7	0.04	0.2	ug/L	5.00		74.8	30-160	5.51	30	
4-Methylphenol	2.0	0.03	0.2	ug/L	5.00		40.8	30-160	13.20	30	
Nitrobenzene	3.7	0.03	0.2	ug/L	5.00		74.8	30-160	5.95	30	
Isophorone	5.5	0.03	0.2	ug/L	5.00		111	30-160	5.45	30	
2-Nitrophenol	3.1	0.04	1.0	ug/L	5.00		61.3	30-160	5.30	30	
2,4-Dimethylphenol	8.9	0.3	1.0	ug/L	13.0		68.3	30-160	11.40	30	
Bis(2-Chloroethoxy)methane	4.4	0.03	0.2	ug/L	5.00		88.1	30-160	4.68	30	
2,4-Dichlorophenol	12.8	0.1	1.0	ug/L	13.0		98.6	30-160	15.20	30	
1,2,4-Trichlorobenzene	2.5	0.03	0.2	ug/L	5.00		49.9	30-160	12.40	30	
Naphthalene	3.1	0.03	0.2	ug/L	5.00		63.0	30-160	0.79	30	
Benzoic acid	5.0	0.1	2.0	ug/L	23.0		21.9	30-160	40.20	30	*
4-Chloroaniline	0.8	0.04	1.0	ug/L	13.0		5.97	30-160	66.10	30	*, J



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKL0734 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKL0734-BSD1)						Prepared: 04-Dec-2022 Analyzed: 27-Jan-2023 16:30					
Hexachlorobutadiene	2.1	0.04	0.2	ug/L	5.00		42.3	30-160	28.00	30	
4-Chloro-3-Methylphenol	12.8	0.1	1.0	ug/L	13.0		98.5	30-160	6.95	30	
2-Methylnaphthalene	2.9	0.03	0.2	ug/L	5.00		58.7	30-160	0.76	30	
Hexachlorocyclopentadiene	6.6	0.1	1.0	ug/L	13.0		50.8	30-160	33.10	30	*
2,4,6-Trichlorophenol	13.0	0.2	1.0	ug/L	13.0		100	30-160	9.28	30	
2,4,5-Trichlorophenol	12.6	0.1	1.0	ug/L	13.0		97.2	30-160	9.51	30	
2-Chloronaphthalene	3.2	0.03	0.2	ug/L	5.00		64.9	30-160	0.36	30	
2-Nitroaniline	15.6	0.2	1.0	ug/L	13.0		120	30-160	8.45	30	
Acenaphthylene	3.7	0.02	0.2	ug/L	5.00		73.9	30-160	6.58	30	
Dimethylphthalate	4.3	0.04	0.2	ug/L	5.00		86.4	30-160	9.11	30	
2,6-Dinitrotoluene	15.5	0.2	1.0	ug/L	13.0		119	30-160	9.36	30	
Acenaphthene	3.7	0.03	0.2	ug/L	5.00		74.2	30-160	4.79	30	
3-Nitroaniline	10.8	0.2	1.0	ug/L	13.0		83.3	30-160	6.23	30	
2,4-Dinitrophenol	24.1	0.2	2.0	ug/L	23.0		105	30-160	20.10	30	
Dibenzofuran	3.6	0.02	0.2	ug/L	5.00		72.7	30-160	5.13	30	
4-Nitrophenol	4.3	0.06	1.0	ug/L	13.0		32.8	30-160	30.60	30	*, Q
2,4-Dinitrotoluene	15.7	0.1	1.0	ug/L	13.0		121	30-160	10.70	30	
Fluorene	2.6	0.02	0.2	ug/L	5.00		52.0	30-160	2.95	30	Q
4-Chlorophenylphenyl ether	3.7	0.02	0.2	ug/L	5.00		74.6	30-160	1.24	30	
Diethyl phthalate	4.7	0.06	0.2	ug/L	5.00		93.5	30-160	12.50	30	
4-Nitroaniline	13.0	0.2	1.0	ug/L	13.0		100	30-160	16.60	30	
4,6-Dinitro-2-methylphenol	28.0	0.4	2.0	ug/L	23.0		122	30-160	13.80	30	
N-Nitrosodiphenylamine	3.5	0.03	0.2	ug/L	5.00		71.0	30-160	2.28	30	
4-Bromophenyl phenyl ether	3.9	0.02	0.2	ug/L	5.00		78.4	30-160	5.62	30	
Hexachlorobenzene	3.6	0.04	0.2	ug/L	5.00		71.2	30-160	0.54	30	
Pentachlorophenol	14.9	0.1	1.0	ug/L	13.0		115	30-160	14.00	30	
Phenanthrene	3.9	0.02	0.2	ug/L	5.00		78.8	30-160	7.73	30	
Anthracene	3.4	0.03	0.2	ug/L	5.00		68.1	30-160	8.10	30	
Carbazole	3.9	0.04	0.2	ug/L	5.00		78.3	30-160	9.17	30	
Di-n-Butylphthalate	4.4	0.05	0.2	ug/L	5.00		88.3	30-160	10.70	30	
Fluoranthene	4.1	0.03	0.2	ug/L	5.00		82.6	30-160	8.27	30	
Pyrene	4.0	0.03	0.2	ug/L	5.00		80.7	30-160	4.94	30	
Butylbenzylphthalate	4.3	0.07	0.2	ug/L	5.00		86.6	30-160	8.73	30	
Benzo(a)anthracene	4.1	0.04	0.2	ug/L	5.00		81.0	30-160	7.14	30	
3,3'-Dichlorobenzidine	9.9	0.3	1.0	ug/L	13.0		75.9	30-160	1.35	30	



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BKL0734 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKL0734-BSD1)						Prepared: 04-Dec-2022 Analyzed: 27-Jan-2023 16:30					
Chrysene	4.1	0.04	0.2	ug/L	5.00		82.4	30-160	7.82	30	
bis(2-Ethylhexyl)phthalate	4.4	0.2	0.2	ug/L	5.00		88.3	30-160	11.00	30	
Di-n-Octylphthalate	4.2	0.05	0.2	ug/L	5.00		84.5	30-160	9.10	30	
Benzo(a)fluoranthene, Total	8.7	0.08	0.4	ug/L	10.0		86.9	30-160	9.61	30	
Benzo(a)pyrene	4.1	0.05	0.2	ug/L	5.00		82.0	30-160	8.45	30	
Indeno(1,2,3-cd)pyrene	4.2	0.06	0.2	ug/L	5.00		83.8	30-160	8.20	30	
Dibenzo(a,h)anthracene	4.3	0.07	0.2	ug/L	5.00		85.3	30-160	8.41	30	
Benzo(g,h,i)perylene	4.2	0.04	0.2	ug/L	5.00		83.1	30-160	8.15	30	
1-Methylnaphthalene	3.1	0.03	0.2	ug/L	5.00		61.8	30-160	1.38	30	
Surrogate: 2-Fluorophenol	2.70			ug/L	7.50		36.0	30-160			
Surrogate: Phenol-d5	1.61			ug/L	7.50		21.5	30-160			*
Surrogate: 2-Chlorophenol-d4	5.12			ug/L	7.50		68.2	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	2.58			ug/L	5.00		51.6	30-160			
Surrogate: Nitrobenzene-d5	3.83			ug/L	5.00		76.7	30-160			
Surrogate: 2-Fluorobiphenyl	3.44			ug/L	5.00		68.9	30-160			
Surrogate: 2,4,6-Tribromophenol	7.08			ug/L	7.50		94.4	30-160			
Surrogate: p-Terphenyl-d14	4.37			ug/L	5.00		87.3	30-160			



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Project Manager: Ali Cochrane

Reported:
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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKL0731 - EPA 8270E-SIM

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0731-BLK1)											
						Prepared: 04-Jan-2023 Analyzed: 20-Jan-2023 13:17					
Naphthalene	0.003	0.001	0.010	ug/L							J
2-Methylnaphthalene	ND	0.001	0.010	ug/L							U
1-Methylnaphthalene	ND	0.0009	0.010	ug/L							U
Acenaphthylene	ND	0.002	0.010	ug/L							U
Acenaphthene	ND	0.003	0.010	ug/L							U
Dibenzofuran	ND	0.002	0.010	ug/L							U
Fluorene	ND	0.002	0.010	ug/L							U
Phenanthrene	ND	0.001	0.010	ug/L							U
Anthracene	ND	0.001	0.010	ug/L							U
Carbazole	ND	0.001	0.010	ug/L							U
Fluoranthene	ND	0.002	0.010	ug/L							U
Pyrene	ND	0.001	0.010	ug/L							U
Benzo(a)anthracene	ND	0.0008	0.010	ug/L							U
Chrysene	ND	0.0009	0.010	ug/L							U
Benzo(b)fluoranthene	ND	0.0005	0.010	ug/L							U
Benzo(k)fluoranthene	ND	0.003	0.010	ug/L							U
Benzo(j)fluoranthene	ND	0.002	0.010	ug/L							U
Benzofluoranthenes, Total	ND	0.004	0.010	ug/L							U
Benzo(a)pyrene	ND	0.002	0.010	ug/L							U
Perylene	ND	0.006	0.010	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.001	0.010	ug/L							U
Dibenzo(a,h)anthracene	ND	0.001	0.010	ug/L							U
Benzo(g,h,i)perylene	ND	0.001	0.010	ug/L							U
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.154			ug/L	0.300		51.3	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.135			ug/L	0.300		45.1	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.195			ug/L	0.300		64.9	57-120			

LCS (BKL0731-BS1)											
						Prepared: 04-Jan-2023 Analyzed: 20-Jan-2023 13:49					
Naphthalene	0.199	0.001	0.010	ug/L	0.300		66.4	37-120			
2-Methylnaphthalene	0.208	0.001	0.010	ug/L	0.300		69.2	37-120			
1-Methylnaphthalene	0.225	0.0009	0.010	ug/L	0.300		75.1	29-120			
Acenaphthylene	0.199	0.002	0.010	ug/L	0.300		66.3	41-120			
Acenaphthene	0.214	0.003	0.010	ug/L	0.300		71.5	41-120			
Dibenzofuran	0.228	0.002	0.010	ug/L	0.300		75.9	38-120			
Fluorene	0.234	0.002	0.010	ug/L	0.300		77.9	43-120			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKL0731 - EPA 8270E-SIM

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BKL0731-BS1)						Prepared: 04-Jan-2023 Analyzed: 20-Jan-2023 13:49					
Phenanthrene	0.208	0.001	0.010	ug/L	0.300		69.2	41-120			
Anthracene	0.217	0.001	0.010	ug/L	0.300		72.2	40-120			
Carbazole	0.226	0.001	0.010	ug/L	0.300		75.2	30-160			
Fluoranthene	0.231	0.002	0.010	ug/L	0.300		77.1	45-120			
Pyrene	0.231	0.001	0.010	ug/L	0.300		77.2	41-120			
Benzo(a)anthracene	0.219	0.0008	0.010	ug/L	0.300		73.2	42-120			
Chrysene	0.227	0.0009	0.010	ug/L	0.300		75.5	44-120			
Benzo(b)fluoranthene	0.198	0.0005	0.010	ug/L	0.300		66.0	44-120			Q
Benzo(k)fluoranthene	0.212	0.003	0.010	ug/L	0.300		70.6	50-120			
Benzo(j)fluoranthene	0.247	0.002	0.010	ug/L	0.300		82.4	39-160			
Benzofluoranthenes, Total	0.657	0.004	0.010	ug/L	0.900		73.0	46-120			
Benzo(a)pyrene	0.184	0.002	0.010	ug/L	0.300		61.5	35-120			
Perylene	0.191	0.006	0.010	ug/L	0.300		63.7	30-160			
Indeno(1,2,3-cd)pyrene	0.210	0.001	0.010	ug/L	0.300		69.9	37-120			
Dibenzo(a,h)anthracene	0.197	0.001	0.010	ug/L	0.300		65.6	34-120			
Benzo(g,h,i)perylene	0.206	0.001	0.010	ug/L	0.300		68.5	38-120			
Surrogate: 2-Methylnaphthalene-d10	0.171			ug/L	0.300		57.0	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.137			ug/L	0.300		45.7	29-120			
Surrogate: Fluoranthene-d10	0.185			ug/L	0.300		61.8	57-120			
LCS Dup (BKL0731-BS1)						Prepared: 04-Jan-2023 Analyzed: 20-Jan-2023 14:21					
Naphthalene	0.216	0.001	0.010	ug/L	0.300		71.8	37-120	7.90	30	
2-Methylnaphthalene	0.224	0.001	0.010	ug/L	0.300		74.8	37-120	7.75	30	
1-Methylnaphthalene	0.240	0.0009	0.010	ug/L	0.300		80.1	29-120	6.38	30	
Acenaphthylene	0.208	0.002	0.010	ug/L	0.300		69.5	41-120	4.70	30	
Acenaphthene	0.231	0.003	0.010	ug/L	0.300		76.8	41-120	7.25	30	
Dibenzofuran	0.241	0.002	0.010	ug/L	0.300		80.3	38-120	5.67	30	
Fluorene	0.247	0.002	0.010	ug/L	0.300		82.4	43-120	5.64	30	
Phenanthrene	0.224	0.001	0.010	ug/L	0.300		74.7	41-120	7.60	30	
Anthracene	0.236	0.001	0.010	ug/L	0.300		78.6	40-120	8.48	30	
Carbazole	0.247	0.001	0.010	ug/L	0.300		82.5	30-160	9.16	30	
Fluoranthene	0.251	0.002	0.010	ug/L	0.300		83.7	45-120	8.18	30	
Pyrene	0.250	0.001	0.010	ug/L	0.300		83.4	41-120	7.77	30	
Benzo(a)anthracene	0.237	0.0008	0.010	ug/L	0.300		78.9	42-120	7.58	30	
Chrysene	0.246	0.0009	0.010	ug/L	0.300		82.0	44-120	8.17	30	



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Reported:
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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BKL0731 - EPA 8270E-SIM

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BKL0731-BSD1)						Prepared: 04-Jan-2023 Analyzed: 20-Jan-2023 14:21					
Benzo(b)fluoranthene	0.214	0.0005	0.010	ug/L	0.300		71.5	44-120	7.98	30	Q
Benzo(k)fluoranthene	0.234	0.003	0.010	ug/L	0.300		78.0	50-120	9.96	30	
Benzo(j)fluoranthene	0.271	0.002	0.010	ug/L	0.300		90.2	39-160	9.06	30	
Benzofluoranthenes, Total	0.719	0.004	0.010	ug/L	0.900		79.9	46-120	9.03	30	
Benzo(a)pyrene	0.201	0.002	0.010	ug/L	0.300		67.1	35-120	8.82	30	
Perylene	0.217	0.006	0.010	ug/L	0.300		72.5	30-160	12.80	30	
Indeno(1,2,3-cd)pyrene	0.228	0.001	0.010	ug/L	0.300		75.9	37-120	8.20	30	
Dibenzo(a,h)anthracene	0.213	0.001	0.010	ug/L	0.300		71.0	34-120	7.82	30	
Benzo(g,h,i)perylene	0.223	0.001	0.010	ug/L	0.300		74.5	38-120	8.36	30	
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.180			ug/L	0.300		60.0	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.144			ug/L	0.300		48.0	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.194			ug/L	0.300		64.7	57-120			



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Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BKL0735 - NWT PH-Dx

Instrument: FID4 Analyst: AA

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0735-BLK1)		Prepared: 03-Jan-2023 Analyzed: 10-Jan-2023 14:48								
Diesel Range Organics (C12-C24)	ND	0.100	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L							U
<i>Surrogate: o-Terphenyl</i>	0.198		mg/L	0.225	88.1		50-150			
LCS (BKL0735-BS1)		Prepared: 03-Jan-2023 Analyzed: 10-Jan-2023 15:07								
Diesel Range Organics (C12-C24)	2.44	0.100	mg/L	3.00	81.3		56-120			
<i>Surrogate: o-Terphenyl</i>	0.227		mg/L	0.225	101		50-150			
LCS Dup (BKL0735-BSD1)		Prepared: 03-Jan-2023 Analyzed: 10-Jan-2023 15:27								
Diesel Range Organics (C12-C24)	2.55	0.100	mg/L	3.00	84.9		56-120	4.43	30	
<i>Surrogate: o-Terphenyl</i>	0.232		mg/L	0.225	103		50-150			



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Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BKL0732 - EPA 8082A

Instrument: ECD7 Analyst: RJL

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BKL0732-BLK1)											
						Prepared: 04-Jan-2023 Analyzed: 12-Jan-2023 08:06					
Aroclor 1016	ND	0.002	0.010	ug/L							U
Aroclor 1221	ND	0.002	0.010	ug/L							U
Aroclor 1232	ND	0.002	0.010	ug/L							U
Aroclor 1242	ND	0.002	0.010	ug/L							U
Aroclor 1248	ND	0.002	0.010	ug/L							U
Aroclor 1254	ND	0.002	0.010	ug/L							U
Aroclor 1260	ND	0.003	0.010	ug/L							U
Aroclor 1262	ND	0.003	0.010	ug/L							U
Aroclor 1268	ND	0.003	0.010	ug/L							U
Surrogate: Decachlorobiphenyl	0.0149			ug/L	0.0200		74.6	29-120			
Surrogate: Tetrachlorometaxylene	0.0110			ug/L	0.0200		55.2	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0150			ug/L	0.0200		74.8	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0106			ug/L	0.0200		52.8	32-120			
LCS (BKL0732-BS1)											
						Prepared: 04-Jan-2023 Analyzed: 12-Jan-2023 08:27					
Aroclor 1016 [2C]	0.041	0.002	0.010	ug/L	0.0500		82.0	54-120			
Aroclor 1260	0.046	0.003	0.010	ug/L	0.0500		91.4	51-128			
Surrogate: Decachlorobiphenyl	0.0154			ug/L	0.0200		76.9	29-120			
Surrogate: Tetrachlorometaxylene	0.0124			ug/L	0.0200		61.8	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0150			ug/L	0.0200		75.1	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0120			ug/L	0.0200		59.9	32-120			
LCS Dup (BKL0732-BSD1)											
						Prepared: 04-Jan-2023 Analyzed: 12-Jan-2023 08:48					
Aroclor 1016 [2C]	0.048	0.002	0.010	ug/L	0.0500		95.4	54-120	15.10	30	
Aroclor 1260	0.051	0.003	0.010	ug/L	0.0500		103	51-128	11.60	30	
Surrogate: Decachlorobiphenyl	0.0172			ug/L	0.0200		85.8	29-120			
Surrogate: Tetrachlorometaxylene	0.0134			ug/L	0.0200		67.2	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0170			ug/L	0.0200		85.1	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0130			ug/L	0.0200		65.2	32-120			



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLA0294 - EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLA0294-BLK1)						Prepared: 12-Jan-2023 Analyzed: 17-Jan-2023 13:47					
Mercury	ND	0.000013	0.000100	mg/L							U
LCS (BLA0294-BS1)						Prepared: 12-Jan-2023 Analyzed: 17-Jan-2023 13:54					
Mercury	0.00181	0.000013	0.000100	mg/L	0.00200		90.6	80-120			
Duplicate (BLA0294-DUP1)						Source: 22L0642-01 Prepared: 12-Jan-2023 Analyzed: 17-Jan-2023 13:59					
Mercury	ND	0.000013	0.000100	mg/L		ND					U
Matrix Spike (BLA0294-MS1)						Source: 22L0642-01 Prepared: 12-Jan-2023 Analyzed: 17-Jan-2023 14:01					
Mercury	0.000983	0.000013	0.000100	mg/L	0.00100	ND	98.3	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLA0294-MSD1)						Source: 22L0642-01 Prepared: 12-Jan-2023 Analyzed: 17-Jan-2023 14:03					
Mercury	0.000962	0.000013	0.000100	mg/L	0.00100	ND	96.2	75-125	2.15	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLA0298 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLA0298-BLK1)						Prepared: 12-Jan-2023 Analyzed: 13-Jan-2023 20:13						
Antimony	121	ND	0.101	0.200	ug/L							U
Beryllium	9	ND	0.0171	0.200	ug/L							U
Chromium	52	ND	0.260	0.500	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Silver	107	ND	0.0220	0.200	ug/L							U
Thallium	205	ND	0.0234	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
Cadmium	111	ND	0.0300	0.100	ug/L							U
Copper	63	ND	0.173	0.500	ug/L							U
Nickel	60	ND	0.0792	0.500	ug/L							U
Selenium	78	ND	0.179	0.500	ug/L							U
Zinc	66	ND	2.92	6.00	ug/L							U
LCS (BLA0298-BS1)						Prepared: 12-Jan-2023 Analyzed: 13-Jan-2023 20:18						
Antimony	121	25.6	0.101	0.200	ug/L	25.0		102	80-120			
Beryllium	9	27.8	0.0171	0.200	ug/L	25.0		111	80-120			
Chromium	52	25.5	0.260	0.500	ug/L	25.0		102	80-120			
Lead	208	27.8	0.0513	0.100	ug/L	25.0		111	80-120			
Silver	107	24.2	0.0220	0.200	ug/L	25.0		96.8	80-120			
Thallium	205	27.1	0.0234	0.200	ug/L	25.0		108	80-120			
Arsenic	75a	24.8	0.0373	0.200	ug/L	25.0		99.0	80-120			
Cadmium	111	26.5	0.0300	0.100	ug/L	25.0		106	80-120			
Copper	63	27.4	0.173	0.500	ug/L	25.0		109	80-120			
Nickel	60	26.5	0.0792	0.500	ug/L	25.0		106	80-120			
Selenium	78	77.5	0.179	0.500	ug/L	80.0		96.9	80-120			
Zinc	66	84.7	2.92	6.00	ug/L	80.0		106	80-120			
Duplicate (BLA0298-DUP1)						Source: 22L0642-01 Prepared: 12-Jan-2023 Analyzed: 14-Jan-2023 01:41						
Antimony	121	ND	0.101	0.200	ug/L		ND					U
Beryllium	9	0.0240	0.0171	0.200	ug/L		0.0210			13.30	20	J
Lead	208	ND	0.0513	0.100	ug/L		ND					U
Silver	107	ND	0.0220	0.200	ug/L		ND					U
Thallium	205	ND	0.0234	0.200	ug/L		ND					U
Arsenic	75a	1.74	0.0373	0.200	ug/L		1.65			5.26	20	
Cadmium	111	ND	0.0300	0.100	ug/L		ND					U



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Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLA0298 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BLA0298-DUP1)		Source: 22L0642-01			Prepared: 12-Jan-2023		Analyzed: 14-Jan-2023 01:41					
Copper	63	ND	0.173	0.500	ug/L		ND					U
Nickel	60	0.604	0.0792	0.500	ug/L		0.600			0.66	20	
Selenium	78	ND	0.179	0.500	ug/L		ND					U
Zinc	66	ND	2.92	6.00	ug/L		ND					U

Duplicate (BLA0298-DUP2)		Source: 22L0642-01			Prepared: 12-Jan-2023		Analyzed: 17-Jan-2023 22:32					
Chromium	52	0.698	0.520	1.00	ug/L		0.694			0.58	20	J, D

Matrix Spike (BLA0298-MS1)		Source: 22L0642-01			Prepared: 12-Jan-2023		Analyzed: 14-Jan-2023 01:46					
Antimony	121	25.0	0.101	0.200	ug/L	25.0	ND	99.9	75-125			
Beryllium	9	23.9	0.0171	0.200	ug/L	25.0	0.0210	95.4	75-125			
Lead	208	24.6	0.0513	0.100	ug/L	25.0	ND	98.5	75-125			
Silver	107	23.4	0.0220	0.200	ug/L	25.0	ND	93.6	75-125			
Thallium	205	24.3	0.0234	0.200	ug/L	25.0	ND	97.0	75-125			
Arsenic	75a	25.6	0.0373	0.200	ug/L	25.0	1.65	95.9	75-125			
Cadmium	111	24.2	0.0300	0.100	ug/L	25.0	ND	97.0	75-125			
Copper	63	24.4	0.173	0.500	ug/L	25.0	ND	97.6	75-125			
Nickel	60	24.6	0.0792	0.500	ug/L	25.0	0.600	96.0	75-125			
Selenium	78	70.1	0.179	0.500	ug/L	80.0	ND	87.7	75-125			
Zinc	66	74.9	2.92	6.00	ug/L	80.0	ND	93.6	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BLA0298-MS2)		Source: 22L0642-01			Prepared: 12-Jan-2023		Analyzed: 17-Jan-2023 22:36					
Chromium	52	22.2	0.520	1.00	ug/L	25.0	0.694	86.0	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLA0298-MSD1)		Source: 22L0642-01			Prepared: 12-Jan-2023		Analyzed: 14-Jan-2023 01:53					
Antimony	121	24.9	0.101	0.200	ug/L	25.0	ND	99.7	75-125	0.20	20	
Beryllium	9	23.2	0.0171	0.200	ug/L	25.0	0.0210	92.8	75-125	2.74	20	
Lead	208	24.7	0.0513	0.100	ug/L	25.0	ND	98.6	75-125	0.10	20	
Silver	107	23.9	0.0220	0.200	ug/L	25.0	ND	95.6	75-125	2.15	20	
Thallium	205	24.3	0.0234	0.200	ug/L	25.0	ND	97.3	75-125	0.31	20	
Arsenic	75a	25.9	0.0373	0.200	ug/L	25.0	1.65	97.1	75-125	1.15	20	
Cadmium	111	24.5	0.0300	0.100	ug/L	25.0	ND	98.2	75-125	1.21	20	
Copper	63	24.8	0.173	0.500	ug/L	25.0	ND	99.1	75-125	1.47	20	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLA0298 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLA0298-MSD1)		Source: 22L0642-01			Prepared: 12-Jan-2023		Analyzed: 14-Jan-2023 01:53					
Nickel	60	25.5	0.0792	0.500	ug/L	25.0	0.600	99.7	75-125	3.71	20	
Selenium	78	74.6	0.179	0.500	ug/L	80.0	ND	93.2	75-125	6.12	20	
Zinc	66	76.8	2.92	6.00	ug/L	80.0	ND	96.0	75-125	2.54	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLA0298-MSD2)		Source: 22L0642-01			Prepared: 12-Jan-2023		Analyzed: 17-Jan-2023 22:40					
Chromium	52	21.8	0.520	1.00	ug/L	25.0	0.694	84.4	75-125	1.85	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLA0293 - EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLA0293-BLK1)						Prepared: 12-Jan-2023 Analyzed: 17-Jan-2023 13:26					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L							U
LCS (BLA0293-BS1)						Prepared: 12-Jan-2023 Analyzed: 17-Jan-2023 13:28					
Mercury, Dissolved	0.00201	0.000013	0.000100	mg/L	0.00200		100	80-120			
Duplicate (BLA0293-DUP1)						Source: 22L0642-02 Prepared: 12-Jan-2023 Analyzed: 17-Jan-2023 13:33					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L		ND					U
Matrix Spike (BLA0293-MS1)						Source: 22L0642-02 Prepared: 12-Jan-2023 Analyzed: 17-Jan-2023 13:35					
Mercury, Dissolved	0.000937	0.000013	0.000100	mg/L	0.00100	ND	93.7	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLA0293-MSD1)						Source: 22L0642-02 Prepared: 12-Jan-2023 Analyzed: 17-Jan-2023 13:38					
Mercury, Dissolved	0.000967	0.000013	0.000100	mg/L	0.00100	ND	96.7	75-125	3.18	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLA0300 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLA0300-BLK1)												
						Prepared: 12-Jan-2023 Analyzed: 13-Jan-2023 20:23						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Beryllium, Dissolved	9	ND	0.0171	0.200	ug/L							U
Chromium, Dissolved	52	ND	0.260	0.500	ug/L							U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L							U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L							U
Nickel, Dissolved	60	ND	0.0792	0.500	ug/L							U
Selenium, Dissolved	78	ND	0.179	0.500	ug/L							U
Zinc, Dissolved	66	ND	2.92	6.00	ug/L							U
Blank (BLA0300-BLK2)												
						Prepared: 12-Jan-2023 Analyzed: 17-Jan-2023 17:43						
Lead, Dissolved	208	0.179	0.0513	0.100	ug/L							
Copper, Dissolved	63	0.624	0.173	0.500	ug/L							
LCS (BLA0300-BS1)												
						Prepared: 12-Jan-2023 Analyzed: 13-Jan-2023 20:28						
Antimony, Dissolved	121	25.7	0.101	0.200	ug/L	25.0		103	80-120			
Beryllium, Dissolved	9	27.0	0.0171	0.200	ug/L	25.0		108	80-120			
Chromium, Dissolved	52	25.1	0.260	0.500	ug/L	25.0		100	80-120			
Lead, Dissolved	208	27.7	0.0513	0.100	ug/L	25.0		111	80-120			B
Silver, Dissolved	107	24.4	0.0220	0.200	ug/L	25.0		97.4	80-120			
Thallium, Dissolved	205	27.1	0.0234	0.200	ug/L	25.0		108	80-120			
Arsenic, Dissolved	75a	24.2	0.0373	0.200	ug/L	25.0		96.9	80-120			
Cadmium, Dissolved	111	26.3	0.0300	0.100	ug/L	25.0		105	80-120			
Copper, Dissolved	63	26.9	0.173	0.500	ug/L	25.0		108	80-120			B
Nickel, Dissolved	60	26.0	0.0792	0.500	ug/L	25.0		104	80-120			
Selenium, Dissolved	78	77.0	0.179	0.500	ug/L	80.0		96.2	80-120			
Zinc, Dissolved	66	82.8	2.92	6.00	ug/L	80.0		103	80-120			
Duplicate (BLA0300-DUP1)												
						Source: 22L0642-02 Prepared: 12-Jan-2023 Analyzed: 14-Jan-2023 00:18						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L		ND					U
Beryllium, Dissolved	9	0.0210	0.0171	0.200	ug/L		0.0250			17.40	20	J
Lead, Dissolved	208	ND	0.0513	0.100	ug/L		ND					B, U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L		ND					U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L		ND					U



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLA0300 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BLA0300-DUP1)		Source: 22L0642-02			Prepared: 12-Jan-2023		Analyzed: 14-Jan-2023 00:18					
Arsenic, Dissolved	75a	1.57	0.0373	0.200	ug/L		1.68			6.71	20	
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L		ND					U
Copper, Dissolved	63	ND	0.173	0.500	ug/L		ND					B, U
Nickel, Dissolved	60	0.517	0.0792	0.500	ug/L		0.566			9.05	20	
Selenium, Dissolved	78	ND	0.179	0.500	ug/L		ND					U
Zinc, Dissolved	66	ND	2.92	6.00	ug/L		ND					U

Duplicate (BLA0300-DUP2)		Source: 22L0642-02			Prepared: 12-Jan-2023		Analyzed: 17-Jan-2023 23:17					
Chromium, Dissolved	52	0.850	0.520	1.00	ug/L		0.896			5.27	20	J, D

Matrix Spike (BLA0300-MS1)		Source: 22L0642-02			Prepared: 12-Jan-2023		Analyzed: 14-Jan-2023 00:23					
Antimony, Dissolved	121	24.8	0.101	0.200	ug/L	25.0	ND	99.3	75-125			
Beryllium, Dissolved	9	24.7	0.0171	0.200	ug/L	25.0	0.0250	98.6	75-125			
Lead, Dissolved	208	25.0	0.0513	0.100	ug/L	25.0	ND	99.9	75-125			B
Silver, Dissolved	107	23.5	0.0220	0.200	ug/L	25.0	ND	94.1	75-125			
Thallium, Dissolved	205	24.4	0.0234	0.200	ug/L	25.0	ND	97.7	75-125			
Arsenic, Dissolved	75a	26.5	0.0373	0.200	ug/L	25.0	1.68	99.3	75-125			
Cadmium, Dissolved	111	25.0	0.0300	0.100	ug/L	25.0	ND	99.9	75-125			
Copper, Dissolved	63	25.4	0.173	0.500	ug/L	25.0	ND	101	75-125			B
Nickel, Dissolved	60	25.6	0.0792	0.500	ug/L	25.0	0.566	100	75-125			
Selenium, Dissolved	78	76.2	0.179	0.500	ug/L	80.0	ND	95.3	75-125			
Zinc, Dissolved	66	78.3	2.92	6.00	ug/L	80.0	ND	97.9	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BLA0300-MS2)		Source: 22L0642-02			Prepared: 12-Jan-2023		Analyzed: 17-Jan-2023 23:20					
Chromium, Dissolved	52	23.4	0.520	1.00	ug/L	25.0	0.896	90.1	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLA0300-MSD1)		Source: 22L0642-02			Prepared: 12-Jan-2023		Analyzed: 14-Jan-2023 00:29					
Antimony, Dissolved	121	24.7	0.101	0.200	ug/L	25.0	ND	98.7	75-125	0.63	20	
Beryllium, Dissolved	9	24.0	0.0171	0.200	ug/L	25.0	0.0250	95.8	75-125	2.96	20	
Lead, Dissolved	208	24.6	0.0513	0.100	ug/L	25.0	ND	98.4	75-125	1.48	20	B
Silver, Dissolved	107	23.8	0.0220	0.200	ug/L	25.0	ND	95.3	75-125	1.22	20	
Thallium, Dissolved	205	24.2	0.0234	0.200	ug/L	25.0	ND	96.7	75-125	1.06	20	
Arsenic, Dissolved	75a	26.1	0.0373	0.200	ug/L	25.0	1.68	97.7	75-125	1.52	20	



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Project: West Duwamish CSO
Project Number: 150218-A-4500.04
Project Manager: Ali Cochrane

Reported:
30-Jan-2023 13:22

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLA0300 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLA0300-MSD1)		Source: 22L0642-02			Prepared: 12-Jan-2023		Analyzed: 14-Jan-2023 00:29					
Cadmium, Dissolved	111	24.8	0.0300	0.100	ug/L	25.0	ND	99.3	75-125	0.52	20	
Copper, Dissolved	63	24.5	0.173	0.500	ug/L	25.0	ND	97.8	75-125	3.59	20	B
Nickel, Dissolved	60	25.5	0.0792	0.500	ug/L	25.0	0.566	99.6	75-125	0.63	20	
Selenium, Dissolved	78	73.7	0.179	0.500	ug/L	80.0	ND	92.1	75-125	3.43	20	
Zinc, Dissolved	66	75.6	2.92	6.00	ug/L	80.0	ND	94.6	75-125	3.46	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLA0300-MSD2)		Source: 22L0642-02			Prepared: 12-Jan-2023		Analyzed: 17-Jan-2023 23:25					
Chromium, Dissolved	52	22.7	0.520	1.00	ug/L	25.0	0.896	87.2	75-125	3.17	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Seattle WA, 98104

Project: West Duwamish CSO
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Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Silver-107	WADOE,WA-DW,DoD-ELAP,NELAP
Beryllium-9	NELAP,WADOE,DoD-ELAP
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-53	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
Antimony-121	NELAP,WADOE,DoD-ELAP
Antimony-123	NELAP
Thallium-205	WADOE,WA-DW,DoD-ELAP,NELAP
Silver-107	WA-DW,DoD-ELAP,NELAP
Beryllium-9	WADOE,DoD-ELAP,NELAP
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Chromium-53	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
Antimony-121	NELAP,WADOE,DoD-ELAP
Antimony-123	NELAP,WADOE,DoD-ELAP
Thallium-205	NELAP,WADOE,DoD-ELAP
EPA 6020B UCT-KED in Water	
Arsenic-75a	WADOE,WA-DW,DoD-ELAP,ADEC,NELAP
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Copper-63	NELAP,WADOE,DoD-ELAP
Copper-65	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Nickel-62	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP
Zinc-66	WADOE,WA-DW,DoD-ELAP
Zinc-67	WADOE,WA-DW,DoD-ELAP
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Cadmium-114	NELAP,WADOE,DoD-ELAP,ADEC
Copper-63	NELAP,WADOE,DoD-ELAP
Copper-65	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Nickel-62	NELAP,WADOE,DoD-ELAP,ADEC



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Selenium-78	NELAP,WADOE,DoD-ELAP
Zinc-66	NELAP,WADOE,DoD-ELAP
Zinc-67	NELAP,WADOE,DoD-ELAP

EPA 7470A in Water

Mercury	WADOE,NELAP,DoD-ELAP
Mercury	WADOE,NELAP,DoD-ELAP

EPA 8082A in Water

Aroclor 1016	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1016 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 [2C]	WADOE,DoD-ELAP,NELAP,ADEC

EPA 8260D in Water

Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE



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Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE



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n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA 8270E in Water

Phenol	NELAP,DoD-ELAP
bis(2-chloroethyl) ether	NELAP,DoD-ELAP
2-Chlorophenol	NELAP,DoD-ELAP
1,3-Dichlorobenzene	NELAP,DoD-ELAP
1,4-Dichlorobenzene	NELAP,DoD-ELAP
1,2-Dichlorobenzene	NELAP,DoD-ELAP
Benzyl Alcohol	NELAP,DoD-ELAP
2,2'-Oxybis(1-chloropropane)	NELAP,DoD-ELAP
2-Methylphenol	NELAP,DoD-ELAP
Hexachloroethane	NELAP,DoD-ELAP
N-Nitroso-di-n-Propylamine	NELAP,DoD-ELAP
4-Methylphenol	NELAP,DoD-ELAP
Nitrobenzene	NELAP,DoD-ELAP
Isophorone	NELAP,DoD-ELAP
2-Nitrophenol	NELAP,DoD-ELAP



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2,4-Dimethylphenol	NELAP,DoD-ELAP
Bis(2-Chloroethoxy)methane	NELAP,DoD-ELAP
2,4-Dichlorophenol	NELAP,DoD-ELAP
1,2,4-Trichlorobenzene	NELAP,DoD-ELAP
Naphthalene	NELAP,DoD-ELAP
Benzoic acid	NELAP,DoD-ELAP
4-Chloroaniline	NELAP,DoD-ELAP
Hexachlorobutadiene	NELAP,DoD-ELAP
4-Chloro-3-Methylphenol	NELAP,DoD-ELAP
2-Methylnaphthalene	NELAP,DoD-ELAP
Hexachlorocyclopentadiene	NELAP,DoD-ELAP
2,4,6-Trichlorophenol	NELAP,DoD-ELAP
2,4,5-Trichlorophenol	NELAP,DoD-ELAP
2-Chloronaphthalene	NELAP,DoD-ELAP
2-Nitroaniline	NELAP,DoD-ELAP
Acenaphthylene	NELAP,DoD-ELAP
Dimethylphthalate	NELAP,DoD-ELAP
2,6-Dinitrotoluene	NELAP,DoD-ELAP
Acenaphthene	NELAP,DoD-ELAP
3-Nitroaniline	NELAP,DoD-ELAP
2,4-Dinitrophenol	NELAP,DoD-ELAP
Dibenzofuran	NELAP,DoD-ELAP
4-Nitrophenol	NELAP,DoD-ELAP
2,4-Dinitrotoluene	NELAP,DoD-ELAP
Fluorene	NELAP,DoD-ELAP
4-Chlorophenylphenyl ether	NELAP,DoD-ELAP
Diethyl phthalate	NELAP,DoD-ELAP
4-Nitroaniline	NELAP,DoD-ELAP
4,6-Dinitro-2-methylphenol	NELAP,DoD-ELAP
N-Nitrosodiphenylamine	NELAP,DoD-ELAP
4-Bromophenyl phenyl ether	NELAP,DoD-ELAP
Hexachlorobenzene	NELAP,DoD-ELAP
Pentachlorophenol	NELAP,DoD-ELAP
Phenanthrene	NELAP,DoD-ELAP
Anthracene	NELAP,DoD-ELAP
Carbazole	NELAP,DoD-ELAP
Di-n-Butylphthalate	NELAP,DoD-ELAP
Fluoranthene	NELAP,DoD-ELAP
Pyrene	NELAP,DoD-ELAP



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Butylbenzylphthalate	NELAP,DoD-ELAP
Benzo(a)anthracene	NELAP,DoD-ELAP
3,3'-Dichlorobenzidine	NELAP,DoD-ELAP
Chrysene	NELAP,DoD-ELAP
bis(2-Ethylhexyl)phthalate	NELAP,DoD-ELAP
Di-n-Octylphthalate	NELAP,DoD-ELAP
Benzo(b)fluoranthene	NELAP,DoD-ELAP
Benzo(k)fluoranthene	NELAP,DoD-ELAP
Benzo(a)fluoranthenes, Total	NELAP
Benzo(a)pyrene	NELAP,DoD-ELAP
Indeno(1,2,3-cd)pyrene	NELAP,DoD-ELAP
Dibenzo(a,h)anthracene	NELAP,DoD-ELAP
Benzo(g,h,i)perylene	NELAP,DoD-ELAP
N-Nitrosodimethylamine	NELAP,DoD-ELAP
1-Methylnaphthalene	NELAP,DoD-ELAP

EPA 8270E-SIM in Water

Naphthalene	ADEC,DoD-ELAP,NELAP,WADOE
2-Methylnaphthalene	ADEC,DoD-ELAP,NELAP
1-Methylnaphthalene	ADEC,DoD-ELAP,NELAP,WADOE
Biphenyl	NELAP
Acenaphthylene	ADEC,DoD-ELAP,NELAP,WADOE
Acenaphthene	ADEC,DoD-ELAP,NELAP,WADOE
Dibenzofuran	ADEC,DoD-ELAP,NELAP
Fluorene	ADEC,DoD-ELAP,NELAP,WADOE
Phenanthrene	ADEC,DoD-ELAP,NELAP,WADOE
Anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Carbazole	NELAP
Fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(a)anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Chrysene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(b)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(k)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(j)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(e)pyrene	NELAP
Benzo(a)pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Perylene	ADEC,NELAP
Indeno(1,2,3-cd)pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Dibenzo(a,h)anthracene	ADEC,DoD-ELAP,NELAP,WADOE



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Benzo(g,h,i)perylene ADEC,DoD-ELAP,NELAP,WADOE

NWTPH-Dx in Water

Diesel Range Organics (C12-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C25)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C24)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C10-C28)	DoD-ELAP,NELAP,WADOE
Diesel Range Organics (C12-C22)	DoD-ELAP
Diesel Range Organics (C12-C25)	DoD-ELAP
Motor Oil Range Organics (C24-C38)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C25-C36)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-C40)	DoD-ELAP,NELAP,WADOE
Residual Range Organics (C23-C32)	DoD-ELAP
Mineral Spirits Range Organics (Tol-C12)	DoD-ELAP,NELAP,WADOE
Mineral Oil Range Organics (C16-C28)	DoD-ELAP,NELAP,WADOE
Kerosene Range Organics (Tol-C18)	DoD-ELAP,NELAP,WADOE
JP8 Range Organics (C8-C18)	DoD-ELAP,NELAP,WADOE
JP5 Range Organics (C10-C16)	DoD-ELAP,NELAP,WADOE
JP4 Range Organics (Tol-C14)	DoD-ELAP,NELAP,WADOE
Jet-A Range Organics (C10-C18)	DoD-ELAP,NELAP,WADOE
Creosote Range Organics (C12-C22)	DoD-ELAP,NELAP,WADOE
Bunker C Range Organics (C10-C38)	DoD-ELAP,NELAP,WADOE
Stoddard Range Organics (C8-C12)	DoD-ELAP,NELAP,WADOE
Transformer Oil Range Organics (C12-C28)	DoD-ELAP,NELAP,WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-Nap)	WADOE,DoD-ELAP
Gasoline Range Organics (2MP-TMB)	WADOE,DoD-ELAP
Gasoline Range Organics (Tol-C12)	WADOE,DoD-ELAP
Gasoline Range Organics (C6-C10)	WADOE,ADEC,DoD-ELAP
Gasoline Range Organics (C5-C12)	WADOE,DoD-ELAP

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



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Notes and Definitions

- * Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- H Hold time violation - Hold time was exceeded.
- J Estimated concentration value detected below the reporting limit.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

29 March 2023

Ali Cochrane
 Aspect Consulting, LLC.
 710 2nd Avenue, Suite 550
 Seattle, WA 98104

RE: West Duwamish CSO (150218)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

<u>Associated Work Order(s)</u>	<u>Associated SDG ID(s)</u>
23B0508	N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Shelly Fishel, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, LLC
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number: 23B0508	Turn-around Requested: Standard	Page: 1 of 1
ARI Client Company: Aspect Consulting	Phone:	Date: 2/24/23
Client Contact: Ari Cochran acochran@aspectconsulting.com		Ice Present?: Yes
Client Project Name: West Duwamish CSD		No. of Coolers: 6
Client Project #: 150219	Samplers: Ashley Provor	Cooler Temps: See CRE

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested										Notes/Comments
					NWTPH GX	Dx	Metals EPA 200.7 200.8 200.9A	Disinfectants (field filtered)	SVOIS	VOCs EPA 4200	SIM PAH-LL 0270	POP LL ANDCLOS	POP LL Longeris		
MW-1-022223	2/24/23	1500	W	17	X	X	X	X	X	X	X	X	Hold		
MW-2-022323	2/23/23	1420		17											
MW-4-022323	↓	1330		17											
MW-5-022223	2/22/23	1240		18											
MW-6-022223	↓	1140		18											
MW-7-022323	2/23/23	1045		17											
MW-8-022323	↓	0950		34									MS/MSD Vol		
MW-X-232202	2/22/23	0100	↓	18	↓	↓	↓	↓	↓	↓	↓	↓			
THP Blank	2/15/23		W	1	X					X			MS/MSD Vol 2/24/23		
Comments/Special Instructions					Relinquished by: (Signature) <i>Ashley Provor</i>	Received by: (Signature) <i>Jacob Walter</i>					Relinquished by: (Signature)	Received by: (Signature)			
					Printed Name: <i>Ashley Provor</i>	Printed Name: <i>Jacob Walter</i>					Printed Name:	Printed Name:			
					Company: <i>Aspect Consulting</i>	Company: <i>AR, LLC</i>					Company:	Company:			
					Date & Time: <i>2/24/23 1009</i>	Date & Time: <i>02/24/23 1009</i>					Date & Time:	Date & Time:			

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-1-022223	23B0508-01	Water	22-Feb-2023 15:00	24-Feb-2023 10:09
MW-1-022223	23B0508-02	Water	22-Feb-2023 15:00	24-Feb-2023 10:09
MW-2-022323	23B0508-03	Water	23-Feb-2023 14:20	24-Feb-2023 10:09
MW-2-022323	23B0508-04	Water	23-Feb-2023 14:20	24-Feb-2023 10:09
MW-4-022323	23B0508-05	Water	23-Feb-2023 13:30	24-Feb-2023 10:09
MW-4-022323	23B0508-06	Water	23-Feb-2023 13:30	24-Feb-2023 10:09
MW-5-022223	23B0508-07	Water	22-Feb-2023 12:40	24-Feb-2023 10:09
MW-5-022223	23B0508-08	Water	22-Feb-2023 12:40	24-Feb-2023 10:09
MW-6-022223	23B0508-09	Water	22-Feb-2023 11:40	24-Feb-2023 10:09
MW-6-022223	23B0508-10	Water	22-Feb-2023 11:40	24-Feb-2023 10:09
MW-7-022323	23B0508-11	Water	23-Feb-2023 10:45	24-Feb-2023 10:09
MW-7-022323	23B0508-12	Water	23-Feb-2023 10:45	24-Feb-2023 10:09
MW-8-022323	23B0508-13	Water	23-Feb-2023 09:50	24-Feb-2023 10:09
MW-8-022323	23B0508-14	Water	23-Feb-2023 09:50	24-Feb-2023 10:09
MW-X-022223	23B0508-15	Water	22-Feb-2023 01:00	24-Feb-2023 10:09
MW-X-022223	23B0508-16	Water	22-Feb-2023 01:00	24-Feb-2023 10:09
Trip Blank	23B0508-17	Water	22-Feb-2023 01:00	24-Feb-2023 10:09



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Project: West Duwamish CSO
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Reported:
29-Mar-2023 20:25

Work Order Case Narrative

Client: Aspect Consulting, LLC.
Project: West Duwamish CSO
Project Number: 150218
Work Order: 23B0508

Sample receipt

Sample(s) as listed on the preceding page were received 24-Feb-2023 10:09 under ARI work order 23B0508. For details regarding sample receipt, please refer to the Cooler Receipt Form.

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except Tetrachlorometaxylene which was out of control low in sample 23B0508-09 on both column. The deviation has been flagged.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD)



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were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Semivolatiles - EPA Method SW8270E

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except 2,4-Dinitrophenol which was out of control low in the initial calibration verifications and the continuing calibration verification. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except as follows. 2-Chlorophenol-d4 which was out of control low in sample 23B0508-11. Phenol-d5 which was out of control low in sample 23B0508-13. The deviations have been flagged.

The method blank(s) were clean at the reporting limits except Di-n-Butylphthalate. All samples which contain analyte have been flagged with a "B" qualifier.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits except 4-Chloroaniline which was out of control low. The deviations have been flagged.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within



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Project: West Duwamish CSO
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Reported:
29-Mar-2023 20:25

advisory control limits except 4-Chloroaniline and 3,3-Dichlorobenzidine which were out of control low. The deviations have been flagged.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270E-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except Benzo(g,h,i)perylene which was out of control low in the initial calibration verification. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except as follows. Dibenzo(a,h)anthracene was out of control low in samples 23B0508-09 and 23B0508-11. Fluoranthene was out of control low in sample 23B0508-09. The deviations have been flagged.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries were within control limits except for Perylene in the blank spike. The BS/BS relative percent difference (RPD) were within control limits except Perylene. The deviations have been flagged.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Total and Dissolved Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Total and Dissolved Mercury - EPA Method 7470

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.



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29-Mar-2023 20:25

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.



WORK ORDER

23B0508

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

Preservation Confirmation

Container ID	Container Type	pH	
23B0508-01 A	Glass NM, Amber, 1000 mL		
23B0508-01 B	Glass NM, Amber, 1000 mL		
23B0508-01 C	Glass NM, Amber, 1000 mL		
23B0508-01 D	Glass NM, Amber, 1000 mL		
23B0508-01 E	Glass NM, Amber, 500 mL		
23B0508-01 F	Glass NM, Amber, 500 mL		
23B0508-01 G	Glass NM, Amber, 500 mL		
23B0508-01 H	Glass NM, Amber, 500 mL		
23B0508-01 I	Glass NM, Amber, 500 mL		
23B0508-01 J	Glass NM, Amber, 500 mL		
23B0508-01 K	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass (P)
23B0508-01 L	VOA Vial, Clear, 40 mL, HCL		
23B0508-01 M	VOA Vial, Clear, 40 mL, HCL		
23B0508-01 N	VOA Vial, Clear, 40 mL, HCL		
23B0508-01 O	VOA Vial, Clear, 40 mL, HCL		
23B0508-01 P	VOA Vial, Clear, 40 mL, HCL		
23B0508-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23B0508-03 A	Glass NM, Amber, 1000 mL		
23B0508-03 B	Glass NM, Amber, 1000 mL		
23B0508-03 C	Glass NM, Amber, 1000 mL		
23B0508-03 D	Glass NM, Amber, 1000 mL		
23B0508-03 E	Glass NM, Amber, 500 mL		
23B0508-03 F	Glass NM, Amber, 500 mL		
23B0508-03 G	Glass NM, Amber, 500 mL		
23B0508-03 H	Glass NM, Amber, 500 mL		
23B0508-03 I	Glass NM, Amber, 500 mL		
23B0508-03 J	Glass NM, Amber, 500 mL		
23B0508-03 K	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23B0508-03 L	VOA Vial, Clear, 40 mL, HCL		
23B0508-03 M	VOA Vial, Clear, 40 mL, HCL		
23B0508-03 N	VOA Vial, Clear, 40 mL, HCL		
23B0508-03 O	VOA Vial, Clear, 40 mL, HCL		
23B0508-03 P	VOA Vial, Clear, 40 mL, HCL		
23B0508-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P



WORK ORDER

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Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

23B0508-05 A	Glass NM, Amber, 1000 mL		
23B0508-05 B	Glass NM, Amber, 1000 mL		
23B0508-05 C	Glass NM, Amber, 1000 mL		
23B0508-05 D	Glass NM, Amber, 1000 mL		
23B0508-05 E	Glass NM, Amber, 500 mL		
23B0508-05 F	Glass NM, Amber, 500 mL		
23B0508-05 G	Glass NM, Amber, 500 mL		
23B0508-05 H	Glass NM, Amber, 500 mL		
23B0508-05 I	Glass NM, Amber, 500 mL		
23B0508-05 J	Glass NM, Amber, 500 mL		
23B0508-05 K	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass (P)
23B0508-05 L	VOA Vial, Clear, 40 mL, HCL		
23B0508-05 M	VOA Vial, Clear, 40 mL, HCL		
23B0508-05 N	VOA Vial, Clear, 40 mL, HCL		
23B0508-05 O	VOA Vial, Clear, 40 mL, HCL		
23B0508-05 P	VOA Vial, Clear, 40 mL, HCL		
23B0508-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23B0508-07 A	Glass NM, Amber, 1000 mL		
23B0508-07 B	Glass NM, Amber, 1000 mL		
23B0508-07 C	Glass NM, Amber, 500 mL		
23B0508-07 D	Glass NM, Amber, 500 mL		
23B0508-07 E	Glass NM, Amber, 500 mL		
23B0508-07 F	Glass NM, Amber, 500 mL		
23B0508-07 G	Glass NM, Amber, 500 mL		
23B0508-07 H	Glass NM, Amber, 500 mL		
23B0508-07 I	Glass NM, Amber, 500 mL		
23B0508-07 J	Glass NM, Amber, 500 mL		
23B0508-07 K	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23B0508-07 L	VOA Vial, Clear, 40 mL, HCL	Bubble	
23B0508-07 M	VOA Vial, Clear, 40 mL, HCL		
23B0508-07 N	VOA Vial, Clear, 40 mL, HCL		
23B0508-07 O	VOA Vial, Clear, 40 mL, HCL		
23B0508-07 P	VOA Vial, Clear, 40 mL, HCL		
23B0508-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23B0508-09 A	Glass NM, Amber, 1000 mL		
23B0508-09 B	Glass NM, Amber, 1000 mL		



WORK ORDER

23B0508

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Client: Aspect Consulting, LLC.	Project Manager: Shelly Fishel
Project: West Duwamish CSO	Project Number: 150218

23B0508-09 C	Glass NM, Amber, 1000 mL		
23B0508-09 D	Glass NM, Amber, 500 mL		
23B0508-09 E	Glass NM, Amber, 500 mL		
23B0508-09 F	Glass NM, Amber, 500 mL		
23B0508-09 G	Glass NM, Amber, 500 mL		
23B0508-09 H	Glass NM, Amber, 500 mL		
23B0508-09 I	Glass NM, Amber, 500 mL		
23B0508-09 J	Glass NM, Amber, 500 mL		
23B0508-09 K	Glass NM, Amber, 500 mL		
23B0508-09 L	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass(P)
23B0508-09 M	VOA Vial, Clear, 40 mL, HCL		
23B0508-09 N	VOA Vial, Clear, 40 mL, HCL		
23B0508-09 O	VOA Vial, Clear, 40 mL, HCL		
23B0508-09 P	VOA Vial, Clear, 40 mL, HCL		
23B0508-09 Q	VOA Vial, Clear, 40 mL, HCL		
23B0508-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	P	<2
23B0508-11 A	Glass NM, Amber, 1000 mL		
23B0508-11 B	Glass NM, Amber, 1000 mL		
23B0508-11 C	Glass NM, Amber, 1000 mL		
23B0508-11 D	Glass NM, Amber, 500 mL		
23B0508-11 E	Glass NM, Amber, 500 mL		
23B0508-11 F	Glass NM, Amber, 500 mL		
23B0508-11 G	Glass NM, Amber, 500 mL		
23B0508-11 H	Glass NM, Amber, 500 mL		
23B0508-11 I	Glass NM, Amber, 500 mL		
23B0508-11 J	HDPE NM, 500 mL, 1:1 HNO3	P	<2
23B0508-11 K	VOA Vial, Clear, 40 mL, HCL		
23B0508-11 L	VOA Vial, Clear, 40 mL, HCL		
23B0508-11 M	VOA Vial, Clear, 40 mL, HCL		
23B0508-11 N	VOA Vial, Clear, 40 mL, HCL		
23B0508-11 O	VOA Vial, Clear, 40 mL, HCL		
23B0508-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	P	<2
23B0508-13 A	Glass NM, Amber, 1000 mL		
23B0508-13 AA	VOA Vial, Clear, 40 mL, HCL		
23B0508-13 AB	VOA Vial, Clear, 40 mL, HCL		
23B0508-13 AC	VOA Vial, Clear, 40 mL, HCL		



WORK ORDER

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Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

23B0508-13 AD	VOA Vial, Clear, 40 mL, HCL		
23B0508-13 AE	VOA Vial, Clear, 40 mL, HCL		
23B0508-13 AF	VOA Vial, Clear, 40 mL, HCL		
23B0508-13 AG	VOA Vial, Clear, 40 mL, HCL		
23B0508-13 B	Glass NM, Amber, 1000 mL		
23B0508-13 C	Glass NM, Amber, 1000 mL		
23B0508-13 D	Glass NM, Amber, 1000 mL		
23B0508-13 E	Glass NM, Amber, 1000 mL		
23B0508-13 F	Glass NM, Amber, 1000 mL		
23B0508-13 G	Glass NM, Amber, 1000 mL		
23B0508-13 H	Glass NM, Amber, 1000 mL		
23B0508-13 I	Glass NM, Amber, 1000 mL		
23B0508-13 J	Glass NM, Amber, 500 mL		
23B0508-13 K	Glass NM, Amber, 500 mL		
23B0508-13 L	Glass NM, Amber, 500 mL		
23B0508-13 M	Glass NM, Amber, 500 mL		
23B0508-13 N	Glass NM, Amber, 500 mL		
23B0508-13 O	Glass NM, Amber, 500 mL		
23B0508-13 P	Glass NM, Amber, 500 mL		
23B0508-13 Q	Glass NM, Amber, 500 mL		
23B0508-13 R	Glass NM, Amber, 500 mL		
23B0508-13 S	Glass NM, Amber, 500 mL		
23B0508-13 T	Glass NM, Amber, 500 mL		
23B0508-13 U	Glass NM, Amber, 500 mL		
23B0508-13 V	HDPE NM, 500 mL, 1:1 HNO3	<2	(Piss CP)
23B0508-13 W	HDPE NM, 500 mL, 1:1 HNO3	<2	P
23B0508-13 X	VOA Vial, Clear, 40 mL, HCL		
23B0508-13 Y	VOA Vial, Clear, 40 mL, HCL		
23B0508-13 Z	VOA Vial, Clear, 40 mL, HCL		
23B0508-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23B0508-14 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23B0508-15 A	Glass NM, Amber, 1000 mL		
23B0508-15 B	Glass NM, Amber, 1000 mL		
23B0508-15 C	Glass NM, Amber, 1000 mL		
23B0508-15 D	Glass NM, Amber, 500 mL		
23B0508-15 E	Glass NM, Amber, 500 mL		



WORK ORDER

23B0508

Samples will be discarded 90 days after submission of a final report unless other instructions are received

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Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

23B0508-15 F	Glass NM, Amber, 500 mL		
23B0508-15 G	Glass NM, Amber, 500 mL		
23B0508-15 H	Glass NM, Amber, 500 mL		
23B0508-15 I	Glass NM, Amber, 500 mL		
23B0508-15 J	Glass NM, Amber, 500 mL		
23B0508-15 K	Glass NM, Amber, 500 mL		
23B0508-15 L	HDPE NM, 500 mL, 1:1 HNO3	<2	Pass (P)
23B0508-15 M	VOA Vial, Clear, 40 mL, HCL		
23B0508-15 N	VOA Vial, Clear, 40 mL, HCL		
23B0508-15 O	VOA Vial, Clear, 40 mL, HCL		
23B0508-15 P	VOA Vial, Clear, 40 mL, HCL		
23B0508-15 Q	VOA Vial, Clear, 40 mL, HCL		
23B0508-16 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	<2	P
23B0508-17 A	VOA Vial, Clear, 40 mL, HCL		
23B0508-17 B	VOA Vial, Clear, 40 mL, HCL		
23B0508-17 C	VOA Vial, Clear, 40 mL, HCL		

[Signature]

Preservation Confirmed By

02/24/23

Date



Cooler Receipt Form

ARI Client: Aspect Consulting
COC No(s): _____ (NA)
Assigned ARI Job No: 2304508

Project Name: West Duwanish CSO
Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO
Were custody papers included with the cooler? YES NO
Were custody papers properly filled out (ink, signed, etc.) YES NO
Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) ★

Time 12:59
If cooler temperature is out of compliance fill out form 00070F cooler # 0.5 2.3 1.0 -0.3 0.5 0.1
Temp Gun ID#: JAC9708

Cooler Accepted by: JSM Date: 02/24/23 Time: 12:59 5 6

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
Was sufficient ice used (if appropriate)? NA YES NO
How were bottles sealed in plastic bags? Individually Grouped Not
Did all bottles arrive in good condition (unbroken)? YES NO
Were all bottle labels complete and legible? YES NO
Did the number of containers listed on COC match with the number of containers received? YES NO
Did all bottle labels and tags agree with custody papers? YES NO
Were all bottles used correct for the requested analyses? YES NO
Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO
Were all VOC vials free of air bubbles? NA YES NO
Was sufficient amount of sample sent in each bottle? YES NO
Date VOC Trip Blank was made at ARI..... NA 02/15/23
Were the sample(s) split by ARI? YES NO Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JSM Date: 02/24/23 Time: 1357 Labels checked by: JSM

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:
A check for frozen samples - none found during layout JSM 02/24/23
vials w/ air bubbles marked on preservation sheet, lab to determine sizes.
By: JSM Date: 02/24/23



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-1-022223
23B0508-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 02/22/2023 15:00

Instrument: NT3 Analyst: PKC

Analyzed: 02/27/2023 11:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-01 L
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>				<i>80-120 %</i>	<i>99.5</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>103</i>	<i>%</i>	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 29-Mar-2023 20:25
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MW-1-022223
23B0508-01 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/22/2023 15:00
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 11:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-01 L
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	103	%	



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
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Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-1-022223
23B0508-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/22/2023 15:00

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 19:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLB0678
Prepared: 02/28/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23B0508-01 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	0.05	ug/L	J
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	0.2	ug/L	J
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	0.4	ug/L	J
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-1-022223
23B0508-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/22/2023 15:00

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 19:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U

Surrogate: 2-Fluorophenol

30-160 % 49.1 %

Surrogate: Phenol-d5

30-160 % 30.9 %

Surrogate: 2-Chlorophenol-d4

30-160 % 79.7 %

Surrogate: 1,2-Dichlorobenzene-d4

30-160 % 74.5 %



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MW-1-022223
23B0508-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 02/22/2023 15:00
Instrument: NT10 Analyst: VTS Analyzed: 03/20/2023 19:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	81.6	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	82.1	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	100	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	80.1	%	



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MW-1-022223
23B0508-01 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 02/22/2023 15:00
Instrument: NT11 Analyst: VTS Analyzed: 03/09/2023 12:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-01 H 01
Preparation Batch: BLB0676 Sample Size: 500 mL
Prepared: 03/01/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 23B0508-01 H 01
Cleanup Batch: CLC0063 Initial Volume: 0.5 uL
Cleaned: 07-Mar-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.013	ug/L	
2-Methylnaphthalene	91-57-6	1	0.001	0.010	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.002	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	0.002	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	0.001	ug/L	J
Chrysene	218-01-9	1	0.0009	0.010	0.001	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.001	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>					42-120 %	54.1	%
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					29-120 %	33.0	%
<i>Surrogate: Fluoranthene-d10</i>					57-120 %	62.3	%



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MW-1-022223
23B0508-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 02/22/2023 15:00
Instrument: FID4 Analyst: AA Analyzed: 03/06/2023 13:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-01 E 01
Preparation Batch: BLB0675 Sample Size: 500 mL
Prepared: 02/28/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	96.2	%	



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Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-1-022223
23B0508-01 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 02/22/2023 15:00
Instrument: ECD7 Analyst: RJL Analyzed: 03/10/2023 14:02

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLB0677 Prepared: 03/01/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23B0508-01 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLC0056 Cleansed: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-01 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLC0058 Cleansed: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-01 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLC0057 Cleansed: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-01 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	57.1	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	44.1	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	54.3	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	40.5	%



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-1-022223
23B0508-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 02/22/2023 15:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 03/11/2023 06:49

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23B0508-01 K 01

Preparation Batch: BLC0206

Sample Size: 25 mL

Prepared: 03/08/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	0.0710	ug/L	J
Chromium	7440-47-3	2	0.520	1.00	2.56	ug/L	D
Lead	7439-92-1	1	0.0513	0.100	0.159	ug/L	
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-1-022223
23B0508-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 02/22/2023 15:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 06:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-01 K 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.593	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.534	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	0.310	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-1-022223
23B0508-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 02/22/2023 15:00
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-01 K
Preparation Batch: BLC0112 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-1-022223
23B0508-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 02/22/2023 15:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 05:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-02 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0670	ug/L	J
Chromium, Dissolved	7440-47-3	2	0.520	1.00	2.42	ug/L	D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-1-022223
23B0508-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/22/2023 15:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 05:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-02 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.593	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.300	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.241	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-1-022223
23B0508-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 02/22/2023 15:00
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 14:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-02 A
Preparation Batch: BLC0113 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 29-Mar-2023 20:25
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MW-2-022323
23B0508-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/23/2023 14:20
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 12:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-03 L
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	0.07	ug/L	J
Toluene	108-88-3	1	0.05	0.20	0.63	ug/L	
Ethylbenzene	100-41-4	1	0.05	0.20	0.10	ug/L	J
m,p-Xylene	179601-23-1	1	0.14	0.40	0.44	ug/L	
o-Xylene	95-47-6	1	0.08	0.20	0.17	ug/L	J
<i>Surrogate: Toluene-d8</i>					80-120 %	98.1 %	
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	100 %	



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MW-2-022323
23B0508-03 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/23/2023 14:20
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 12:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-03 L
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	100	%	



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-2-022323
23B0508-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 14:20

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 19:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLB0678
Prepared: 02/28/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23B0508-03 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-2-022323
23B0508-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 14:20

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 19:38

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	51.4 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	32.2 %	
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	83.2 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	75.5 %	



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MW-2-022323
23B0508-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 02/23/2023 14:20
Instrument: NT10 Analyst: VTS Analyzed: 03/20/2023 19:38

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	85.5	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	83.5	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	102	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	81.6	%	



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Project Manager: Ali Cochrane

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MW-2-022323
23B0508-03 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 02/23/2023 14:20
Instrument: NT11 Analyst: VTS Analyzed: 03/09/2023 13:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-03 H 01
Preparation Batch: BLB0676 Sample Size: 500 mL
Prepared: 03/01/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 23B0508-03 H 01
Cleanup Batch: CLC0063 Initial Volume: 0.5 uL
Cleaned: 07-Mar-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.017	ug/L	
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.006	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.003	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	0.102	ug/L	
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.002	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	0.002	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	0.0008	ug/L	J
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>					42-120 %	54.2	%
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					29-120 %	32.0	%
<i>Surrogate: Fluoranthene-d10</i>					57-120 %	61.3	%



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MW-2-022323
23B0508-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 02/23/2023 14:20
Instrument: FID4 Analyst: AA Analyzed: 03/06/2023 13:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-03 E 01
Preparation Batch: BLB0675 Sample Size: 500 mL
Prepared: 02/28/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	94.3	%	



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Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-2-022323
23B0508-03 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 02/23/2023 14:20
Instrument: ECD7 Analyst: RJL Analyzed: 03/10/2023 14:23

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLB0677 Prepared: 03/01/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23B0508-03 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLC0056 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-03 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLC0058 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-03 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLC0057 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-03 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	53.3	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	41.8	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	52.0	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	39.2	%



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MW-2-022323
23B0508-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/23/2023 14:20
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 06:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-03 K 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	2	0.520	1.00	0.740	ug/L	J, D
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-2-022323
23B0508-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 02/23/2023 14:20

Instrument: ICPMS2 Analyst: MCB

Analyzed: 03/11/2023 06:54

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23B0508-03 K 01

Preparation Batch: BLC0206

Sample Size: 25 mL

Prepared: 03/08/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.319	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.346	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.343	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.603	ug/L	
Zinc	7440-66-6	1	2.92	6.00	4.29	ug/L	J



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MW-2-022323
23B0508-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 02/23/2023 14:20
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-03 K
Preparation Batch: BLC0112 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-2-022323
23B0508-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 02/23/2023 14:20
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 05:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-04 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	2	0.520	1.00	0.644	ug/L	J, D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-2-022323
23B0508-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/23/2023 14:20
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 05:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-04 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.262	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.178	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.283	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.973	ug/L	
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-2-022323
23B0508-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 02/23/2023 14:20
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 14:08

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-04 A
Preparation Batch: BLC0113 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-4-022323
23B0508-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/23/2023 13:30
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 12:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-05 L
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>					80-120 %	101	%
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	96.8	%



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MW-4-022323
23B0508-05 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/23/2023 13:30
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 12:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-05 L
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	96.8	%	



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Project Manager: Ali Cochrane

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MW-4-022323
23B0508-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 13:30

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 20:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLB0678
Prepared: 02/28/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23B0508-05 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	0.1	ug/L	J
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-4-022323
23B0508-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 13:30

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 20:17

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U

Surrogate: 2-Fluorophenol

30-160 % 51.8 %

Surrogate: Phenol-d5

30-160 % 30.9 %

Surrogate: 2-Chlorophenol-d4

30-160 % 82.5 %

Surrogate: 1,2-Dichlorobenzene-d4

30-160 % 78.1 %



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MW-4-022323
23B0508-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 02/23/2023 13:30
Instrument: NT10 Analyst: VTS Analyzed: 03/20/2023 20:17

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	87.0	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	86.5	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	102	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	83.3	%	



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Project Number: 150218
Project Manager: Ali Cochrane

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MW-4-022323
23B0508-05 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 02/23/2023 13:30
Instrument: NT11 Analyst: VTS Analyzed: 03/09/2023 13:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-05 H 01
Preparation Batch: BLB0676 Sample Size: 500 mL
Prepared: 03/01/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 23B0508-05 H 01
Cleanup Batch: CLC0063 Initial Volume: 0.5 uL
Cleaned: 07-Mar-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.009	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.003	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.003	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	0.005	ug/L	J
Carbazole	86-74-8	1	0.001	0.010	0.001	ug/L	J
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	0.002	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	0.0008	ug/L	J
Chrysene	218-01-9	1	0.0009	0.010	0.001	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.0008	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10	42-120 %	56.7	%
Surrogate: Dibenzo[a,h]anthracene-d14	29-120 %	34.8	%
Surrogate: Fluoranthene-d10	57-120 %	64.6	%



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MW-4-022323
23B0508-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 02/23/2023 13:30
Instrument: FID4 Analyst: AA Analyzed: 03/06/2023 14:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-05 E 01
Preparation Batch: BLB0675 Sample Size: 500 mL
Prepared: 02/28/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	97.1	%	



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Project Manager: Ali Cochrane

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MW-4-022323
23B0508-05 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 02/23/2023 13:30
Instrument: ECD7 Analyst: RJL Analyzed: 03/10/2023 14:44

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLB0677 Prepared: 03/01/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23B0508-05 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLC0056 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-05 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLC0058 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-05 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLC0057 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-05 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	43.5 %
Surrogate: Tetrachlorometaxylene	32-120 %	35.7 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	42.2 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	33.9 %



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MW-4-022323
23B0508-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/23/2023 13:30
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-05 K 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	2	0.520	1.00	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	0.0560	ug/L	J
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-4-022323
23B0508-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 02/23/2023 13:30
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-05 K 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.765	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.229	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.281	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-4-022323
23B0508-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 02/23/2023 13:30
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-05 K
Preparation Batch: BLC0112 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-4-022323
23B0508-05RE1 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/23/2023 13:30
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/14/2023 04:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-05RE1 K 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U



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MW-4-022323
23B0508-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 02/23/2023 13:30
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 05:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-06 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	2	0.520	1.00	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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Project Manager: Ali Cochrane

Reported:
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MW-4-022323
23B0508-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED

Sampled: 02/23/2023 13:30

Instrument: ICPMS2 Analyst: MCB

Analyzed: 03/11/2023 05:47

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23B0508-06 A 01

Preparation Batch: BLC0207

Sample Size: 25 mL

Prepared: 03/08/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.739	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.175	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-4-022323
23B0508-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 02/23/2023 13:30
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 14:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-06 A
Preparation Batch: BLC0113 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-5-022223
23B0508-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/22/2023 12:40
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 12:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-07 L
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>					80-120 %	97.9 %	
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	102 %	



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MW-5-022223
23B0508-07 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/22/2023 12:40
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 12:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-07 L
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.9	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	102	%	



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Reported:
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MW-5-022223
23B0508-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/22/2023 12:40

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 20:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLB0678
Prepared: 02/28/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23B0508-07 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	0.2	ug/L	J
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-5-022223
23B0508-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/22/2023 12:40

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 20:56

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	0.06	ug/L	J
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	0.05	ug/L	J, B
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U

Surrogate: 2-Fluorophenol

30-160 % 50.4 %

Surrogate: Phenol-d5

30-160 % 32.5 %

Surrogate: 2-Chlorophenol-d4

30-160 % 82.2 %

Surrogate: 1,2-Dichlorobenzene-d4

30-160 % 75.8 %



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MW-5-022223
23B0508-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 02/22/2023 12:40
Instrument: NT10 Analyst: VTS Analyzed: 03/20/2023 20:56

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	84.6	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	81.5	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	102	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	79.4	%	



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MW-5-022223
23B0508-07 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 02/22/2023 12:40
Instrument: NT11 Analyst: VTS Analyzed: 03/09/2023 14:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-07 H 01
Preparation Batch: BLB0676 Sample Size: 500 mL
Prepared: 03/01/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 23B0508-07 H 01
Cleanup Batch: CLC0063 Initial Volume: 0.5 uL
Cleaned: 07-Mar-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.007	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.003	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.002	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	0.002	ug/L	J
Pyrene	129-00-0	1	0.001	0.010	0.002	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	0.001	ug/L	J
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.0009	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 53.8 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 34.9 %
Surrogate: Fluoranthene-d10 57-120 % 65.5 %



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MW-5-022223
23B0508-07 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 02/22/2023 12:40
Instrument: FID4 Analyst: AA Analyzed: 03/06/2023 14:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-07 E 01
Preparation Batch: BLB0675 Sample Size: 500 mL
Prepared: 02/28/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	90.3	%	



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MW-5-022223
23B0508-07 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 02/22/2023 12:40
Instrument: ECD7 Analyst: RJL Analyzed: 03/10/2023 15:05

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLB0677 Prepared: 03/01/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23B0508-07 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLC0056 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-07 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLC0058 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-07 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLC0057 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-07 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	48.7	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	47.9	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	48.1	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	44.9	%



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MW-5-022223
23B0508-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/22/2023 12:40
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-07 K 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	2	0.520	1.00	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	0.113	ug/L	
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-5-022223
23B0508-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 02/22/2023 12:40
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-07 K 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.45	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	1.74	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	2.17	ug/L	
Selenium	7782-49-2	1	0.179	0.500	0.196	ug/L	J
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-5-022223
23B0508-07 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 02/22/2023 12:40
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-07 K
Preparation Batch: BLC0112 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-5-022223
23B0508-07RE1 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/22/2023 12:40
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/14/2023 04:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-07RE1 K 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	0.126	ug/L	J



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MW-5-022223
23B0508-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 02/22/2023 12:40
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 05:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-08 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	0.155	ug/L	J
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0180	ug/L	J
Chromium, Dissolved	7440-47-3	2	0.520	1.00	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-5-022223
23B0508-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/22/2023 12:40
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 05:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-08 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.63	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	1.54	ug/L	
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	2.38	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.201	ug/L	J
Zinc, Dissolved	7440-66-6	1	2.92	6.00	3.38	ug/L	J



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MW-5-022223
23B0508-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 02/22/2023 12:40
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 14:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-08 A
Preparation Batch: BLC0113 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project Manager: Ali Cochrane

Reported:
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MW-6-022223
23B0508-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 02/22/2023 11:40

Instrument: NT3 Analyst: PKC

Analyzed: 02/27/2023 13:15

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23B0508-09 M

Preparation Batch: BLB0668

Sample Size: 10 mL

Prepared: 02/27/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>					80-120 %	98.1	%
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	100	%



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MW-6-022223
23B0508-09 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/22/2023 11:40
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 13:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-09 M
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	100	%	



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MW-6-022223
23B0508-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/22/2023 11:40

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 21:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLB0678
Prepared: 02/28/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23B0508-09 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	0.1	ug/L	J
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
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Project Manager: Ali Cochrane

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MW-6-022223
23B0508-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/22/2023 11:40

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 21:35

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U

Surrogate: 2-Fluorophenol

30-160 % 48.8 %

Surrogate: Phenol-d5

30-160 % 30.4 %

Surrogate: 2-Chlorophenol-d4

30-160 % 84.6 %

Surrogate: 1,2-Dichlorobenzene-d4

30-160 % 70.3 %



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MW-6-022223
23B0508-09 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 02/22/2023 11:40
Instrument: NT10 Analyst: VTS Analyzed: 03/20/2023 21:35

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	77.5	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	77.9	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	94.9	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	79.9	%	



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MW-6-022223
23B0508-09 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 02/22/2023 11:40
Instrument: NT11 Analyst: VTS Analyzed: 03/09/2023 14:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-09 G 01
Preparation Batch: BLB0676 Sample Size: 500 mL
Prepared: 03/01/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 23B0508-09 G 01
Cleanup Batch: CLC0063 Initial Volume: 0.5 uL
Cleaned: 07-Mar-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.009	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.002	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	0.001	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.0005	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 45.9 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 26.0 % *
Surrogate: Fluoranthene-d10 57-120 % 53.7 % *



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MW-6-022223
23B0508-09 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 02/22/2023 11:40
Instrument: FID4 Analyst: AA Analyzed: 03/06/2023 14:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-09 D 01
Preparation Batch: BLB0675 Sample Size: 500 mL
Prepared: 02/28/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	101	%	



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MW-6-022223
23B0508-09 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 02/22/2023 11:40

Instrument: ECD7 Analyst: RJL

Analyzed: 03/10/2023 15:25

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLB0677 Prepared: 03/01/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23B0508-09 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLC0056 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-09 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLC0058 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-09 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLC0057 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-09 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	31.8	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	0.870	% *
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	36.2	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	0.667	% *



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MW-6-022223
23B0508-09 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/22/2023 11:40
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-09 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Beryllium	7440-41-7	1	0.0171	0.200	0.0450	ug/L	J
Chromium	7440-47-3	2	0.520	1.00	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-6-022223
23B0508-09 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 02/22/2023 11:40
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-09 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	3.28	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	0.0370	ug/L	J
Copper	7440-50-8	1	0.173	0.500	1.78	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	3.28	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	3.12	ug/L	J



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MW-6-022223
23B0508-09 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 02/22/2023 11:40
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-09 L
Preparation Batch: BLC0112 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-6-022223
23B0508-09RE1 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/22/2023 11:40
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/14/2023 04:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-09RE1 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-6-022223
23B0508-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B

Sampled: 02/22/2023 11:40

Instrument: ICPMS2 Analyst: MCB

Analyzed: 03/11/2023 06:35

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23B0508-10 A 01

Preparation Batch: BLC0207

Sample Size: 25 mL

Prepared: 03/08/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0490	ug/L	J
Chromium, Dissolved	7440-47-3	2	0.520	1.00	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-6-022223
23B0508-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/22/2023 11:40
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 06:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-10 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	3.21	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.275	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	3.33	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	2.95	ug/L	J



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MW-6-022223
23B0508-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 02/22/2023 11:40
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 14:19

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-10 A
Preparation Batch: BLC0113 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-7-022323
23B0508-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 02/23/2023 10:45

Instrument: NT3 Analyst: PKC

Analyzed: 02/27/2023 13:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLB0668
Prepared: 02/27/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 23B0508-11 K

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>					80-120 %	98.1 %	
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	97.3 %	



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MW-7-022323
23B0508-11 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/23/2023 10:45
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 13:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-11 K
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	97.3	%	



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Reported:
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MW-7-022323
23B0508-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 10:45

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 22:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLB0678
Prepared: 02/28/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23B0508-11 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	0.4	ug/L	
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	2.9	ug/L	
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	0.3	ug/L	J
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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MW-7-022323
23B0508-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 10:45

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 22:14

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	0.08	ug/L	J
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>46.7 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>29.5 %</i>	*
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>80.8 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>66.7 %</i>	



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MW-7-022323
23B0508-11 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 02/23/2023 10:45
Instrument: NT10 Analyst: VTS Analyzed: 03/20/2023 22:14

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	74.4	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	72.7	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	90.4	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	69.9	%	



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MW-7-022323
23B0508-11 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 02/23/2023 10:45
Instrument: NT11 Analyst: VTS Analyzed: 03/09/2023 15:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-11 G 01
Preparation Batch: BLB0676 Sample Size: 500 mL
Prepared: 03/01/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 23B0508-11 G 01
Cleanup Batch: CLC0063 Initial Volume: 0.5 uL
Cleaned: 07-Mar-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.011	ug/L	
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.001	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	0.002	ug/L	J
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.001	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 53.2 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 28.5 % *

Surrogate: Fluoranthene-d10

57-120 % 58.3 %



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MW-7-022323
23B0508-11 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 02/23/2023 10:45
Instrument: FID4 Analyst: AA Analyzed: 03/06/2023 15:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-11 D 01
Preparation Batch: BLB0675 Sample Size: 500 mL
Prepared: 02/28/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	95.4	%	



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MW-7-022323
23B0508-11 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 02/23/2023 10:45

Instrument: ECD7 Analyst: RJL

Analyzed: 03/10/2023 15:46

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLB0677 Prepared: 03/01/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23B0508-11 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLC0056 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-11 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLC0058 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-11 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLC0057 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-11 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	50.3 %
Surrogate: Tetrachlorometaxylene	32-120 %	40.5 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	48.6 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	40.0 %



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MW-7-022323
23B0508-11 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/23/2023 10:45
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/14/2023 03:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-11 J 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	1	0.260	0.500	0.288	ug/L	J
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-7-022323
23B0508-11 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 02/23/2023 10:45
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-11 J 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	5.19	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	1.53	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	1.05	ug/L	
Selenium	7782-49-2	1	0.179	0.500	0.317	ug/L	J
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-7-022323
23B0508-11 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 02/23/2023 10:45
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-11 J
Preparation Batch: BLC0112 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-7-022323
23B0508-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B

Sampled: 02/23/2023 10:45

Instrument: ICPMS2 Analyst: MCB

Analyzed: 03/11/2023 06:40

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23B0508-12 A 01

Preparation Batch: BLC0207

Sample Size: 25 mL

Prepared: 03/08/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	2	0.520	1.00	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	0.134	ug/L	
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-7-022323
23B0508-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/23/2023 10:45
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 06:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-12 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	5.18	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	2.05	ug/L	
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	1.08	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-7-022323
23B0508-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 02/23/2023 10:45
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 14:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-12 A
Preparation Batch: BLC0113 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-8-022323
23B0508-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 02/23/2023 09:50

Instrument: NT3 Analyst: PKC

Analyzed: 02/27/2023 14:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLB0668
Prepared: 02/27/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 23B0508-13 X

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>					80-120 %	101 %	
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	99.2 %	



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MW-8-022323
23B0508-13 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/23/2023 09:50
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 14:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-13 X
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	99.2	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-8-022323
23B0508-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 09:50

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 22:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLB0678
Prepared: 02/28/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23B0508-13 D 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	0.2	ug/L	J
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-8-022323
23B0508-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 09:50

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 22:53

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	0.07	ug/L	J
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U

Surrogate: 2-Fluorophenol

30-160 % 47.1 %

Surrogate: Phenol-d5

30-160 % 29.9 % *

Surrogate: 2-Chlorophenol-d4

30-160 % 85.4 %

Surrogate: 1,2-Dichlorobenzene-d4

30-160 % 71.9 %



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-8-022323
23B0508-13 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 09:50

Instrument: NT10 Analyst: VTS

Analyzed: 03/20/2023 22:53

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	81.0	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	79.1	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	98.9	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	81.1	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-8-022323
23B0508-13 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 02/23/2023 09:50
Instrument: NT11 Analyst: VTS Analyzed: 03/09/2023 15:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-13 M 01
Preparation Batch: BLB0676 Sample Size: 500 mL
Prepared: 03/01/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 23B0508-13 M 01
Cleanup Batch: CLC0063 Initial Volume: 0.5 uL
Cleaned: 07-Mar-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.006	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.004	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	0.002	ug/L	J
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	0.003	ug/L	J
Pyrene	129-00-0	1	0.001	0.010	0.003	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	0.001	ug/L	J
Chrysene	218-01-9	1	0.0009	0.010	0.002	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.0008	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 50.6 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 32.6 %
Surrogate: Fluoranthene-d10 57-120 % 58.3 %



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MW-8-022323
23B0508-13 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 02/23/2023 09:50
Instrument: FID4 Analyst: AA Analyzed: 03/06/2023 15:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-13 J 01
Preparation Batch: BLB0675 Sample Size: 500 mL
Prepared: 02/28/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	90.3	%	



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MW-8-022323
23B0508-13 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 02/23/2023 09:50
Instrument: ECD7 Analyst: RJL Analyzed: 03/10/2023 16:07

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLB0677 Prepared: 03/01/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23B0508-13 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLC0056 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-13 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLC0058 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-13 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLC0057 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-13 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	38.3 %
Surrogate: Tetrachlorometaxylene	32-120 %	43.7 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	36.8 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	41.1 %



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MW-8-022323
23B0508-13 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/23/2023 09:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 06:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-13 W 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	2	0.520	1.00	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-8-022323
23B0508-13 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 02/23/2023 09:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 06:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-13 W 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.95	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.182	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.307	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-8-022323
23B0508-13 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 02/23/2023 09:50
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-13 W
Preparation Batch: BLC0112 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-8-022323
23B0508-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 02/23/2023 09:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 05:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-14 B 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	2	0.520	1.00	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-8-022323
23B0508-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/23/2023 09:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 05:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-14 B 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.75	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.270	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-8-022323
23B0508-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 02/23/2023 09:50
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-14 B
Preparation Batch: BLC0113 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-X-022223
23B0508-15 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/22/2023 01:00
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 14:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-15 M
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>				<i>80-120 %</i>	<i>100</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>99.6</i>	<i>%</i>	



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MW-X-022223
23B0508-15 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/22/2023 01:00
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 14:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-15 M
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	100	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	99.6	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-X-022223
23B0508-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/22/2023 01:00

Instrument: NT10 Analyst: VTS

Analyzed: 03/21/2023 04:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLB0678
Prepared: 02/28/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23B0508-15 B 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	0.09	ug/L	J
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-X-022223
23B0508-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/22/2023 01:00

Instrument: NT10 Analyst: VTS

Analyzed: 03/21/2023 04:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>49.4 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>31.3 %</i>	
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>85.1 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>67.5 %</i>	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-X-022223
23B0508-15 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/22/2023 01:00

Instrument: NT10 Analyst: VTS

Analyzed: 03/21/2023 04:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	80.2	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	76.4	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	91.2	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	79.7	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-X-022223
23B0508-15 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 02/22/2023 01:00
Instrument: NT11 Analyst: VTS Analyzed: 03/09/2023 17:27

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-15 G 01
Preparation Batch: BLB0676 Sample Size: 500 mL
Prepared: 03/01/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 23B0508-15 G 01
Cleanup Batch: CLC0063 Initial Volume: 0.5 uL
Cleaned: 07-Mar-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.009	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	0.002	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.003	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.002	0.010	0.002	ug/L	J
Pyrene	129-00-0	1	0.001	0.010	0.002	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	0.001	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.0008	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 50.7 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 31.8 %
Surrogate: Fluoranthene-d10 57-120 % 58.9 %



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MW-X-022223
23B0508-15 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 02/22/2023 01:00
Instrument: FID4 Analyst: AA Analyzed: 03/06/2023 16:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0508-15 D 01
Preparation Batch: BLB0675 Sample Size: 500 mL
Prepared: 02/28/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	94.3	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-X-022223
23B0508-15 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 02/22/2023 01:00
Instrument: ECD7 Analyst: RJL Analyzed: 03/10/2023 17:52

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLB0677 Prepared: 03/01/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23B0508-15 A 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLC0056 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-15 A 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLC0058 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-15 A 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLC0057 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0508-15 A 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	41.6 %
Surrogate: Tetrachlorometaxylene	32-120 %	42.8 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	41.4 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	41.2 %



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MW-X-022223
23B0508-15 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/22/2023 01:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-15 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Beryllium	7440-41-7	1	0.0171	0.200	0.0520	ug/L	J
Chromium	7440-47-3	2	0.520	1.00	ND	ug/L	U
Lead	7439-92-1	1	0.0513	0.100	0.0700	ug/L	J
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

MW-X-022223
23B0508-15 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 02/22/2023 01:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 03/11/2023 08:54

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23B0508-15 L 01

Preparation Batch: BLC0206

Sample Size: 25 mL

Prepared: 03/08/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	3.49	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	0.0370	ug/L	J
Copper	7440-50-8	1	0.173	0.500	1.91	ug/L	
Nickel	7440-02-0	1	0.0792	0.500	3.62	ug/L	
Selenium	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc	7440-66-6	1	2.92	6.00	3.31	ug/L	J



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 29-Mar-2023 20:25
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MW-X-022223
23B0508-15 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 02/22/2023 01:00
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-15 L
Preparation Batch: BLC0112 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-X-022223
23B0508-15RE1 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/22/2023 01:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/14/2023 04:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-15RE1 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U



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MW-X-022223
23B0508-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 02/22/2023 01:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 06:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-16 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0490	ug/L	J
Chromium, Dissolved	7440-47-3	2	0.520	1.00	ND	ug/L	U
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-X-022223
23B0508-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/22/2023 01:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 06:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0508-16 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	3.35	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.277	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	3.27	ug/L	
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	3.17	ug/L	J



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MW-X-022223
23B0508-16 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 02/22/2023 01:00
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 14:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0508-16 A
Preparation Batch: BLC0113 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Trip Blank
23B0508-17 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/22/2023 01:00
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 11:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-17 A
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>					80-120 %	97.6	%
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	101	%



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 29-Mar-2023 20:25
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Trip Blank
23B0508-17 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/22/2023 01:00
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 11:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0508-17 A
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.6	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	101	%	



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLB0668 - NWTPhg

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0668-BLK1)										
					Prepared: 27-Feb-2023		Analyzed: 27-Feb-2023 10:40			
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.92		ug/L	5.00		98.5	80-120			
Surrogate: 4-Bromofluorobenzene	4.86		ug/L	5.00		97.3	80-120			
Blank (BLB0668-BLK2)										
					Prepared: 27-Feb-2023		Analyzed: 27-Feb-2023 10:40			
Benzene	ND	0.05	0.20	ug/L						U
Toluene	ND	0.05	0.20	ug/L						U
Ethylbenzene	ND	0.05	0.20	ug/L						U
m,p-Xylene	ND	0.14	0.40	ug/L						U
o-Xylene	ND	0.08	0.20	ug/L						U
Surrogate: Toluene-d8	4.92		ug/L	5.00		98.5	80-120			
Surrogate: 4-Bromofluorobenzene	4.86		ug/L	5.00		97.3	80-120			
LCS (BLB0668-BS1)										
					Prepared: 27-Feb-2023		Analyzed: 27-Feb-2023 08:48			
Gasoline Range Organics (Tol-Nap)	1060	100	ug/L	1000		106	72-128			
Surrogate: Toluene-d8	4.94		ug/L	5.00		98.7	80-120			
Surrogate: 4-Bromofluorobenzene	5.00		ug/L	5.00		100	80-120			
LCS (BLB0668-BS2)										
					Prepared: 27-Feb-2023		Analyzed: 27-Feb-2023 09:10			
Benzene	10.5	0.05	0.20	ug/L	10.0	105	80-120			
Toluene	10.3	0.05	0.20	ug/L	10.0	103	80-120			
Ethylbenzene	10.6	0.05	0.20	ug/L	10.0	106	80-120			
m,p-Xylene	21.9	0.14	0.40	ug/L	20.0	110	80-121			
o-Xylene	10.7	0.08	0.20	ug/L	10.0	107	80-121			
Surrogate: Toluene-d8	4.98		ug/L	5.00		99.6	80-120			
Surrogate: 4-Bromofluorobenzene	5.06		ug/L	5.00		101	80-120			
LCS Dup (BLB0668-BSD1)										
					Prepared: 27-Feb-2023		Analyzed: 27-Feb-2023 09:32			
Gasoline Range Organics (Tol-Nap)	878	100	ug/L	1000		87.8	72-128	18.30	30	
Surrogate: Toluene-d8	5.01		ug/L	5.00		100	80-120			
Surrogate: 4-Bromofluorobenzene	5.03		ug/L	5.00		101	80-120			
LCS Dup (BLB0668-BSD2)										
					Prepared: 27-Feb-2023		Analyzed: 27-Feb-2023 09:54			
Benzene	10.1	0.05	0.20	ug/L	10.0	101	80-120	4.26	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLB0668 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLB0668-BSD2)					Prepared: 27-Feb-2023 Analyzed: 27-Feb-2023 09:54						
Toluene	9.99	0.05	0.20	ug/L	10.0		99.9	80-120	3.12	30	
Ethylbenzene	9.66	0.05	0.20	ug/L	10.0		96.6	80-120	9.14	30	
m,p-Xylene	20.0	0.14	0.40	ug/L	20.0		99.8	80-121	9.34	30	
o-Xylene	9.86	0.08	0.20	ug/L	10.0		98.6	80-121	7.97	30	
Surrogate: Toluene-d8	5.15			ug/L	5.00		103	80-120			
Surrogate: 4-Bromofluorobenzene	5.13			ug/L	5.00		103	80-120			

Matrix Spike (BLB0668-MS1)		Source: 23B0508-13			Prepared: 27-Feb-2023 Analyzed: 27-Feb-2023 18:53						
Gasoline Range Organics (Tol-Nap)	1030		100	ug/L	1000	ND	103	72-128			
Surrogate: Toluene-d8	5.06			ug/L	5.00	5.07	101	80-120			
Surrogate: 4-Bromofluorobenzene	5.16			ug/L	5.00	4.96	103	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BLB0668-MS2)		Source: 23B0508-13			Prepared: 27-Feb-2023 Analyzed: 27-Feb-2023 19:37						
Benzene	10.9	0.05	0.20	ug/L	10.0	ND	109	80-120			
Toluene	10.8	0.05	0.20	ug/L	10.0	ND	108	80-120			
Ethylbenzene	10.5	0.05	0.20	ug/L	10.0	ND	105	80-120			
m,p-Xylene	21.8	0.14	0.40	ug/L	20.0	ND	109	80-121			
o-Xylene	10.6	0.08	0.20	ug/L	10.0	ND	106	80-121			
Surrogate: Toluene-d8	5.19			ug/L	5.00	5.07	104	80-120			
Surrogate: 4-Bromofluorobenzene	5.12			ug/L	5.00	4.96	102	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLB0668-MSD1)		Source: 23B0508-13			Prepared: 27-Feb-2023 Analyzed: 27-Feb-2023 19:15						
Gasoline Range Organics (Tol-Nap)	996		100	ug/L	1000	ND	99.6	72-128	2.91	30	
Surrogate: Toluene-d8	4.96			ug/L	5.00	5.07	99.2	80-120			
Surrogate: 4-Bromofluorobenzene	4.98			ug/L	5.00	4.96	99.6	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLB0668-MSD2)		Source: 23B0508-13			Prepared: 27-Feb-2023 Analyzed: 27-Feb-2023 19:59						
Benzene	11.2	0.05	0.20	ug/L	10.0	ND	112	80-120	2.69	30	
Toluene	11.0	0.05	0.20	ug/L	10.0	ND	110	80-120	2.02	30	
Ethylbenzene	10.5	0.05	0.20	ug/L	10.0	ND	105	80-120	0.24	30	



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLB0668 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Detection Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLB0668-MSD2)											
Source: 23B0508-13			Prepared: 27-Feb-2023 Analyzed: 27-Feb-2023 19:59								
m,p-Xylene	22.0	0.14	0.40	ug/L	20.0	ND	110	80-121	1.20	30	
o-Xylene	10.7	0.08	0.20	ug/L	10.0	ND	107	80-121	1.29	30	
<i>Surrogate: Toluene-d8</i>	5.11			ug/L	5.00	5.07	102	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.11			ug/L	5.00	4.96	102	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0678-BLK1)											
						Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 17:02					
Phenol	ND	0.01	0.2	ug/L							U
bis(2-chloroethyl) ether	ND	0.03	0.2	ug/L							U
2-Chlorophenol	ND	0.03	0.2	ug/L							U
1,3-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,4-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,2-Dichlorobenzene	ND	0.03	0.2	ug/L							U
Benzyl Alcohol	ND	0.02	0.2	ug/L							U
2,2'-Oxybis(1-chloropropane)	ND	0.03	0.2	ug/L							U
2-Methylphenol	ND	0.03	0.2	ug/L							U
Hexachloroethane	ND	0.04	0.2	ug/L							U
N-Nitroso-di-n-Propylamine	ND	0.04	0.2	ug/L							U
4-Methylphenol	ND	0.03	0.2	ug/L							U
Nitrobenzene	ND	0.03	0.2	ug/L							U
Isophorone	ND	0.03	0.2	ug/L							U
2-Nitrophenol	ND	0.04	1.0	ug/L							U
2,4-Dimethylphenol	ND	0.3	1.0	ug/L							U
Bis(2-Chloroethoxy)methane	ND	0.03	0.2	ug/L							U
2,4-Dichlorophenol	ND	0.1	1.0	ug/L							U
1,2,4-Trichlorobenzene	ND	0.03	0.2	ug/L							U
Naphthalene	ND	0.03	0.2	ug/L							U
Benzoic acid	ND	0.1	2.0	ug/L							U
4-Chloroaniline	ND	0.04	1.0	ug/L							U
Hexachlorobutadiene	ND	0.04	0.2	ug/L							U
4-Chloro-3-Methylphenol	ND	0.1	1.0	ug/L							U
2-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Hexachlorocyclopentadiene	ND	0.1	1.0	ug/L							U
2,4,6-Trichlorophenol	ND	0.2	1.0	ug/L							U
2,4,5-Trichlorophenol	ND	0.1	1.0	ug/L							U
2-Chloronaphthalene	ND	0.03	0.2	ug/L							U
2-Nitroaniline	ND	0.2	1.0	ug/L							U
Acenaphthylene	ND	0.02	0.2	ug/L							U
Dimethylphthalate	ND	0.04	0.2	ug/L							U
2,6-Dinitrotoluene	ND	0.2	1.0	ug/L							U
Acenaphthene	ND	0.03	0.2	ug/L							U
3-Nitroaniline	ND	0.2	1.0	ug/L							U



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0678-BLK1)											
						Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 17:02					
2,4-Dinitrophenol	ND	0.2	2.0	ug/L							U
Dibenzofuran	ND	0.02	0.2	ug/L							U
4-Nitrophenol	ND	0.06	1.0	ug/L							U
2,4-Dinitrotoluene	ND	0.1	1.0	ug/L							U
Fluorene	ND	0.02	0.2	ug/L							U
4-Chlorophenylphenyl ether	ND	0.02	0.2	ug/L							U
Diethyl phthalate	0.1	0.06	0.2	ug/L							J
4-Nitroaniline	ND	0.2	1.0	ug/L							U
4,6-Dinitro-2-methylphenol	ND	0.4	2.0	ug/L							U
N-Nitrosodiphenylamine	ND	0.03	0.2	ug/L							U
4-Bromophenyl phenyl ether	ND	0.02	0.2	ug/L							U
Hexachlorobenzene	ND	0.04	0.2	ug/L							U
Pentachlorophenol	ND	0.1	1.0	ug/L							U
Phenanthrene	ND	0.02	0.2	ug/L							U
Anthracene	ND	0.03	0.2	ug/L							U
Carbazole	ND	0.04	0.2	ug/L							U
Di-n-Butylphthalate	0.3	0.05	0.2	ug/L							
Fluoranthene	ND	0.03	0.2	ug/L							U
Pyrene	ND	0.03	0.2	ug/L							U
Butylbenzylphthalate	ND	0.07	0.2	ug/L							U
Benzo(a)anthracene	ND	0.04	0.2	ug/L							U
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L							U
Chrysene	ND	0.04	0.2	ug/L							U
bis(2-Ethylhexyl)phthalate	ND	0.2	0.2	ug/L							U
Di-n-Octylphthalate	ND	0.05	0.2	ug/L							U
Benzo(a)fluoranthene, Total	ND	0.08	0.4	ug/L							U
Benzo(a)pyrene	ND	0.05	0.2	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.06	0.2	ug/L							U
Dibenzo(a,h)anthracene	ND	0.07	0.2	ug/L							U
Benzo(g,h,i)perylene	ND	0.04	0.2	ug/L							U
1-Methylnaphthalene	ND	0.03	0.2	ug/L							U
<i>Surrogate: 2-Fluorophenol</i>	4.23			ug/L	7.50		56.4	30-160			
<i>Surrogate: Phenol-d5</i>	2.79			ug/L	7.50		37.2	30-160			
<i>Surrogate: 2-Chlorophenol-d4</i>	7.13			ug/L	7.50		95.0	30-160			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0678-BLK1)					Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 17:02						
Surrogate: 1,2-Dichlorobenzene-d4	4.01			ug/L	5.00		80.3	30-160			
Surrogate: Nitrobenzene-d5	4.50			ug/L	5.00		89.9	30-160			
Surrogate: 2-Fluorobiphenyl	4.29			ug/L	5.00		85.8	30-160			
Surrogate: 2,4,6-Tribromophenol	6.86			ug/L	7.50		91.5	30-160			
Surrogate: p-Terphenyl-d14	4.13			ug/L	5.00		82.5	30-160			
Blank (BLB0678-BLK2)					Prepared: 28-Feb-2023 Analyzed: 21-Mar-2023 03:22						
Phenol	ND	0.01	0.2	ug/L							U
bis(2-chloroethyl) ether	ND	0.03	0.2	ug/L							U
2-Chlorophenol	ND	0.03	0.2	ug/L							U
1,3-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,4-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,2-Dichlorobenzene	ND	0.03	0.2	ug/L							U
Benzyl Alcohol	ND	0.02	0.2	ug/L							U
2,2'-Oxybis(1-chloropropane)	ND	0.03	0.2	ug/L							U
2-Methylphenol	ND	0.03	0.2	ug/L							U
Hexachloroethane	ND	0.04	0.2	ug/L							U
N-Nitroso-di-n-Propylamine	ND	0.04	0.2	ug/L							U
4-Methylphenol	ND	0.03	0.2	ug/L							U
Nitrobenzene	ND	0.03	0.2	ug/L							U
Isophorone	ND	0.03	0.2	ug/L							U
2-Nitrophenol	ND	0.04	1.0	ug/L							U
2,4-Dimethylphenol	ND	0.3	1.0	ug/L							U
Bis(2-Chloroethoxy)methane	ND	0.03	0.2	ug/L							U
2,4-Dichlorophenol	ND	0.1	1.0	ug/L							U
1,2,4-Trichlorobenzene	ND	0.03	0.2	ug/L							U
Naphthalene	ND	0.03	0.2	ug/L							U
Benzoic acid	ND	0.1	2.0	ug/L							U
4-Chloroaniline	ND	0.04	1.0	ug/L							U
Hexachlorobutadiene	ND	0.04	0.2	ug/L							U
4-Chloro-3-Methylphenol	ND	0.1	1.0	ug/L							U
2-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Hexachlorocyclopentadiene	ND	0.1	1.0	ug/L							U
2,4,6-Trichlorophenol	ND	0.2	1.0	ug/L							U
2,4,5-Trichlorophenol	ND	0.1	1.0	ug/L							U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0678-BLK2)						Prepared: 28-Feb-2023 Analyzed: 21-Mar-2023 03:22					
2-Chloronaphthalene	ND	0.03	0.2	ug/L							U
2-Nitroaniline	ND	0.2	1.0	ug/L							U
Acenaphthylene	ND	0.02	0.2	ug/L							U
Dimethylphthalate	ND	0.04	0.2	ug/L							U
2,6-Dinitrotoluene	ND	0.2	1.0	ug/L							U
Acenaphthene	ND	0.03	0.2	ug/L							U
3-Nitroaniline	ND	0.2	1.0	ug/L							U
2,4-Dinitrophenol	ND	0.2	2.0	ug/L							U
Dibenzofuran	ND	0.02	0.2	ug/L							U
4-Nitrophenol	ND	0.06	1.0	ug/L							U
2,4-Dinitrotoluene	ND	0.1	1.0	ug/L							U
Fluorene	ND	0.02	0.2	ug/L							U
4-Chlorophenylphenyl ether	ND	0.02	0.2	ug/L							U
Diethyl phthalate	0.1	0.06	0.2	ug/L							J
4-Nitroaniline	ND	0.2	1.0	ug/L							U
4,6-Dinitro-2-methylphenol	ND	0.4	2.0	ug/L							U
N-Nitrosodiphenylamine	ND	0.03	0.2	ug/L							U
4-Bromophenyl phenyl ether	ND	0.02	0.2	ug/L							U
Hexachlorobenzene	ND	0.04	0.2	ug/L							U
Pentachlorophenol	ND	0.1	1.0	ug/L							U
Phenanthrene	ND	0.02	0.2	ug/L							U
Anthracene	ND	0.03	0.2	ug/L							U
Carbazole	ND	0.04	0.2	ug/L							U
Di-n-Butylphthalate	0.3	0.05	0.2	ug/L							
Fluoranthene	ND	0.03	0.2	ug/L							U
Pyrene	ND	0.03	0.2	ug/L							U
Butylbenzylphthalate	ND	0.07	0.2	ug/L							U
Benzo(a)anthracene	ND	0.04	0.2	ug/L							U
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L							U
Chrysene	ND	0.04	0.2	ug/L							U
bis(2-Ethylhexyl)phthalate	ND	0.2	0.2	ug/L							U
Di-n-Octylphthalate	ND	0.05	0.2	ug/L							U
Benzo(a)fluoranthene, Total	ND	0.08	0.4	ug/L							U
Benzo(a)pyrene	ND	0.05	0.2	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.06	0.2	ug/L							U



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0678-BLK2)											
						Prepared: 28-Feb-2023	Analyzed: 21-Mar-2023 03:22				
Dibenzo(a,h)anthracene	ND	0.07	0.2	ug/L							U
Benzo(g,h,i)perylene	ND	0.04	0.2	ug/L							U
1-Methylnaphthalene	ND	0.03	0.2	ug/L							U
<i>Surrogate: 2-Fluorophenol</i>	4.32			ug/L	7.50		57.6	30-160			
<i>Surrogate: Phenol-d5</i>	2.79			ug/L	7.50		37.2	30-160			
<i>Surrogate: 2-Chlorophenol-d4</i>	6.64			ug/L	7.50		88.5	30-160			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.10			ug/L	5.00		82.1	30-160			
<i>Surrogate: Nitrobenzene-d5</i>	4.42			ug/L	5.00		88.3	30-160			
<i>Surrogate: 2-Fluorobiphenyl</i>	4.29			ug/L	5.00		85.7	30-160			
<i>Surrogate: 2,4,6-Tribromophenol</i>	6.74			ug/L	7.50		89.9	30-160			
<i>Surrogate: p-Terphenyl-d14</i>	4.11			ug/L	5.00		82.3	30-160			
LCS (BLB0678-BS1)											
						Prepared: 28-Feb-2023	Analyzed: 20-Mar-2023 17:41				
Phenol	1.7	0.01	0.2	ug/L	5.00		34.2	30-160			
bis(2-chloroethyl) ether	4.1	0.03	0.2	ug/L	5.00		82.5	30-160			
2-Chlorophenol	4.0	0.03	0.2	ug/L	5.00		80.3	30-160			
1,3-Dichlorobenzene	3.4	0.03	0.2	ug/L	5.00		67.7	30-160			
1,4-Dichlorobenzene	3.9	0.03	0.2	ug/L	5.00		78.2	30-160			
1,2-Dichlorobenzene	3.6	0.03	0.2	ug/L	5.00		71.6	30-160			
Benzyl Alcohol	2.9	0.02	0.2	ug/L	5.00		57.1	30-160			
2,2'-Oxybis(1-chloropropane)	4.4	0.03	0.2	ug/L	5.00		87.2	30-160			
2-Methylphenol	3.2	0.03	0.2	ug/L	5.00		64.1	30-160			
Hexachloroethane	3.1	0.04	0.2	ug/L	5.00		61.0	30-160			
N-Nitroso-di-n-Propylamine	4.0	0.04	0.2	ug/L	5.00		79.5	30-160			
4-Methylphenol	3.2	0.03	0.2	ug/L	5.00		63.7	30-160			
Nitrobenzene	3.8	0.03	0.2	ug/L	5.00		76.9	30-160			
Isophorone	5.6	0.03	0.2	ug/L	5.00		112	30-160			
2-Nitrophenol	4.0	0.04	1.0	ug/L	5.00		79.1	30-160			
2,4-Dimethylphenol	9.5	0.3	1.0	ug/L	13.0		73.4	30-160			
Bis(2-Chloroethoxy)methane	4.7	0.03	0.2	ug/L	5.00		93.3	30-160			
2,4-Dichlorophenol	14.5	0.1	1.0	ug/L	13.0		112	30-160			
1,2,4-Trichlorobenzene	3.5	0.03	0.2	ug/L	5.00		70.4	30-160			
Naphthalene	3.8	0.03	0.2	ug/L	5.00		76.1	30-160			
Benzoic acid	11.8	0.1	2.0	ug/L	23.0		51.4	30-160			
4-Chloroaniline	2.6	0.04	1.0	ug/L	13.0		19.8	30-160			*



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLB0678-BS1)						Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 17:41					
Hexachlorobutadiene	3.3	0.04	0.2	ug/L	5.00		65.1	30-160			
4-Chloro-3-Methylphenol	12.6	0.1	1.0	ug/L	13.0		96.8	30-160			
2-Methylnaphthalene	3.8	0.03	0.2	ug/L	5.00		75.5	30-160			
Hexachlorocyclopentadiene	6.4	0.1	1.0	ug/L	13.0		49.4	30-160			
2,4,6-Trichlorophenol	12.6	0.2	1.0	ug/L	13.0		97.1	30-160			
2,4,5-Trichlorophenol	12.1	0.1	1.0	ug/L	13.0		92.9	30-160			
2-Chloronaphthalene	3.7	0.03	0.2	ug/L	5.00		74.3	30-160			
2-Nitroaniline	10.9	0.2	1.0	ug/L	13.0		83.9	30-160			
Acenaphthylene	3.8	0.02	0.2	ug/L	5.00		76.1	30-160			
Dimethylphthalate	4.3	0.04	0.2	ug/L	5.00		86.6	30-160			
2,6-Dinitrotoluene	13.0	0.2	1.0	ug/L	13.0		100	30-160			
Acenaphthene	3.9	0.03	0.2	ug/L	5.00		77.4	30-160			
3-Nitroaniline	10.9	0.2	1.0	ug/L	13.0		84.1	30-160			
2,4-Dinitrophenol	19.8	0.2	2.0	ug/L	23.0		86.2	30-160			Q
Dibenzofuran	3.9	0.02	0.2	ug/L	5.00		78.1	30-160			
4-Nitrophenol	4.3	0.06	1.0	ug/L	13.0		33.0	30-160			
2,4-Dinitrotoluene	12.0	0.1	1.0	ug/L	13.0		92.0	30-160			
Fluorene	4.0	0.02	0.2	ug/L	5.00		79.1	30-160			
4-Chlorophenylphenyl ether	4.2	0.02	0.2	ug/L	5.00		84.3	30-160			
Diethyl phthalate	5.2	0.06	0.2	ug/L	5.00		105	30-160			
4-Nitroaniline	11.6	0.2	1.0	ug/L	13.0		89.5	30-160			
4,6-Dinitro-2-methylphenol	23.8	0.4	2.0	ug/L	23.0		103	30-160			
N-Nitrosodiphenylamine	4.0	0.03	0.2	ug/L	5.00		80.0	30-160			
4-Bromophenyl phenyl ether	4.4	0.02	0.2	ug/L	5.00		88.4	30-160			
Hexachlorobenzene	4.0	0.04	0.2	ug/L	5.00		80.9	30-160			
Pentachlorophenol	12.9	0.1	1.0	ug/L	13.0		99.3	30-160			
Phenanthrene	3.9	0.02	0.2	ug/L	5.00		78.0	30-160			
Anthracene	3.6	0.03	0.2	ug/L	5.00		71.7	30-160			
Carbazole	4.1	0.04	0.2	ug/L	5.00		82.9	30-160			
Di-n-Butylphthalate	4.5	0.05	0.2	ug/L	5.00		90.0	30-160			B
Fluoranthene	3.6	0.03	0.2	ug/L	5.00		71.5	30-160			
Pyrene	3.9	0.03	0.2	ug/L	5.00		77.9	30-160			
Butylbenzylphthalate	4.2	0.07	0.2	ug/L	5.00		84.5	30-160			
Benzo(a)anthracene	4.0	0.04	0.2	ug/L	5.00		79.4	30-160			
3,3'-Dichlorobenzidine	8.8	0.3	1.0	ug/L	13.0		67.8	30-160			



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Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLB0678-BS1)											
						Prepared: 28-Feb-2023	Analyzed: 20-Mar-2023 17:41				
Chrysene	3.8	0.04	0.2	ug/L	5.00		76.2	30-160			
bis(2-Ethylhexyl)phthalate	3.9	0.2	0.2	ug/L	5.00		77.2	30-160			
Di-n-Octylphthalate	4.2	0.05	0.2	ug/L	5.00		83.6	30-160			
Benzo(a)anthracene, Total	8.1	0.08	0.4	ug/L	10.0		81.3	30-160			
Benzo(a)pyrene	4.1	0.05	0.2	ug/L	5.00		81.2	30-160			
Indeno(1,2,3-cd)pyrene	3.7	0.06	0.2	ug/L	5.00		74.5	30-160			
Dibenzo(a,h)anthracene	3.7	0.07	0.2	ug/L	5.00		74.6	30-160			
Benzo(g,h,i)perylene	3.8	0.04	0.2	ug/L	5.00		75.6	30-160			
1-Methylnaphthalene	4.0	0.03	0.2	ug/L	5.00		80.2	30-160			
<i>Surrogate: 2-Fluorophenol</i>	4.25			ug/L	7.50		56.7	30-160			
<i>Surrogate: Phenol-d5</i>	2.85			ug/L	7.50		38.0	30-160			
<i>Surrogate: 2-Chlorophenol-d4</i>	6.34			ug/L	7.50		84.5	30-160			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	3.71			ug/L	5.00		74.2	30-160			
<i>Surrogate: Nitrobenzene-d5</i>	4.13			ug/L	5.00		82.6	30-160			
<i>Surrogate: 2-Fluorobiphenyl</i>	3.96			ug/L	5.00		79.3	30-160			
<i>Surrogate: 2,4,6-Tribromophenol</i>	7.49			ug/L	7.50		99.9	30-160			
<i>Surrogate: p-Terphenyl-d14</i>	3.97			ug/L	5.00		79.5	30-160			
LCS Dup (BLB0678-BSD1)											
						Prepared: 28-Feb-2023	Analyzed: 20-Mar-2023 18:20				
Phenol	2.0	0.01	0.2	ug/L	5.00		39.5	30-160	14.40	30	
bis(2-chloroethyl) ether	4.9	0.03	0.2	ug/L	5.00		97.7	30-160	16.80	30	
2-Chlorophenol	4.7	0.03	0.2	ug/L	5.00		93.4	30-160	15.00	30	
1,3-Dichlorobenzene	4.0	0.03	0.2	ug/L	5.00		79.7	30-160	16.20	30	
1,4-Dichlorobenzene	4.7	0.03	0.2	ug/L	5.00		93.4	30-160	17.70	30	
1,2-Dichlorobenzene	4.2	0.03	0.2	ug/L	5.00		84.6	30-160	16.60	30	
Benzyl Alcohol	3.3	0.02	0.2	ug/L	5.00		66.9	30-160	15.80	30	
2,2'-Oxybis(1-chloropropane)	5.2	0.03	0.2	ug/L	5.00		104	30-160	18.00	30	
2-Methylphenol	3.8	0.03	0.2	ug/L	5.00		75.2	30-160	15.90	30	
Hexachloroethane	3.7	0.04	0.2	ug/L	5.00		74.2	30-160	19.40	30	
N-Nitroso-di-n-Propylamine	4.6	0.04	0.2	ug/L	5.00		92.6	30-160	15.10	30	
4-Methylphenol	3.7	0.03	0.2	ug/L	5.00		74.5	30-160	15.60	30	
Nitrobenzene	4.4	0.03	0.2	ug/L	5.00		88.7	30-160	14.30	30	
Isophorone	6.4	0.03	0.2	ug/L	5.00		128	30-160	13.80	30	
2-Nitrophenol	4.6	0.04	1.0	ug/L	5.00		92.8	30-160	16.00	30	
2,4-Dimethylphenol	10.8	0.3	1.0	ug/L	13.0		83.2	30-160	12.60	30	



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Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLB0678-BSD1)						Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 18:20					
Bis(2-Chloroethoxy)methane	5.2	0.03	0.2	ug/L	5.00		104	30-160	11.10	30	
2,4-Dichlorophenol	16.1	0.1	1.0	ug/L	13.0		124	30-160	10.10	30	
1,2,4-Trichlorobenzene	4.0	0.03	0.2	ug/L	5.00		80.7	30-160	13.60	30	
Naphthalene	4.4	0.03	0.2	ug/L	5.00		87.5	30-160	14.00	30	
Benzoic acid	14.0	0.1	2.0	ug/L	23.0		61.0	30-160	17.00	30	
4-Chloroaniline	3.6	0.04	1.0	ug/L	13.0		27.7	30-160	33.00	30	*
Hexachlorobutadiene	4.0	0.04	0.2	ug/L	5.00		79.3	30-160	19.60	30	
4-Chloro-3-Methylphenol	14.3	0.1	1.0	ug/L	13.0		110	30-160	12.60	30	
2-Methylnaphthalene	4.3	0.03	0.2	ug/L	5.00		85.8	30-160	12.80	30	
Hexachlorocyclopentadiene	8.1	0.1	1.0	ug/L	13.0		62.0	30-160	22.70	30	
2,4,6-Trichlorophenol	14.6	0.2	1.0	ug/L	13.0		112	30-160	14.50	30	
2,4,5-Trichlorophenol	13.8	0.1	1.0	ug/L	13.0		106	30-160	13.50	30	
2-Chloronaphthalene	4.3	0.03	0.2	ug/L	5.00		85.5	30-160	14.10	30	
2-Nitroaniline	12.5	0.2	1.0	ug/L	13.0		96.2	30-160	13.70	30	
Acenaphthylene	4.4	0.02	0.2	ug/L	5.00		87.2	30-160	13.50	30	
Dimethylphthalate	4.9	0.04	0.2	ug/L	5.00		98.5	30-160	12.80	30	
2,6-Dinitrotoluene	15.0	0.2	1.0	ug/L	13.0		115	30-160	13.80	30	
Acenaphthene	4.4	0.03	0.2	ug/L	5.00		88.3	30-160	13.20	30	
3-Nitroaniline	12.9	0.2	1.0	ug/L	13.0		98.9	30-160	16.20	30	
2,4-Dinitrophenol	24.4	0.2	2.0	ug/L	23.0		106	30-160	20.50	30	Q
Dibenzofuran	4.4	0.02	0.2	ug/L	5.00		88.7	30-160	12.70	30	
4-Nitrophenol	5.0	0.06	1.0	ug/L	13.0		38.7	30-160	15.80	30	
2,4-Dinitrotoluene	13.7	0.1	1.0	ug/L	13.0		105	30-160	13.60	30	
Fluorene	4.5	0.02	0.2	ug/L	5.00		90.1	30-160	13.00	30	
4-Chlorophenylphenyl ether	4.7	0.02	0.2	ug/L	5.00		95.0	30-160	12.00	30	
Diethyl phthalate	5.7	0.06	0.2	ug/L	5.00		115	30-160	9.44	30	
4-Nitroaniline	13.6	0.2	1.0	ug/L	13.0		105	30-160	15.80	30	
4,6-Dinitro-2-methylphenol	28.2	0.4	2.0	ug/L	23.0		123	30-160	16.90	30	
N-Nitrosodiphenylamine	4.6	0.03	0.2	ug/L	5.00		91.3	30-160	13.20	30	
4-Bromophenyl phenyl ether	5.2	0.02	0.2	ug/L	5.00		103	30-160	15.40	30	
Hexachlorobenzene	4.8	0.04	0.2	ug/L	5.00		96.9	30-160	18.00	30	
Pentachlorophenol	15.1	0.1	1.0	ug/L	13.0		116	30-160	15.40	30	
Phenanthrene	4.5	0.02	0.2	ug/L	5.00		90.9	30-160	15.30	30	
Anthracene	4.2	0.03	0.2	ug/L	5.00		83.2	30-160	14.90	30	
Carbazole	4.7	0.04	0.2	ug/L	5.00		94.2	30-160	12.80	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLB0678-BSD1)											
						Prepared: 28-Feb-2023	Analyzed: 20-Mar-2023 18:20				
Di-n-Butylphthalate	5.0	0.05	0.2	ug/L	5.00		100	30-160	10.70	30	B
Fluoranthene	4.2	0.03	0.2	ug/L	5.00		84.3	30-160	16.40	30	
Pyrene	4.1	0.03	0.2	ug/L	5.00		82.4	30-160	5.63	30	
Butylbenzylphthalate	4.8	0.07	0.2	ug/L	5.00		96.4	30-160	13.20	30	
Benzo(a)anthracene	4.6	0.04	0.2	ug/L	5.00		91.0	30-160	13.70	30	
3,3'-Dichlorobenzidine	10.2	0.3	1.0	ug/L	13.0		78.2	30-160	14.30	30	
Chrysene	4.4	0.04	0.2	ug/L	5.00		88.1	30-160	14.50	30	
bis(2-Ethylhexyl)phthalate	4.4	0.2	0.2	ug/L	5.00		88.7	30-160	13.90	30	
Di-n-Octylphthalate	4.8	0.05	0.2	ug/L	5.00		95.6	30-160	13.40	30	
Benzo(a)fluoranthene, Total	9.5	0.08	0.4	ug/L	10.0		94.8	30-160	15.30	30	
Benzo(a)pyrene	4.6	0.05	0.2	ug/L	5.00		93.0	30-160	13.50	30	
Indeno(1,2,3-cd)pyrene	4.3	0.06	0.2	ug/L	5.00		86.4	30-160	14.70	30	
Dibenzo(a,h)anthracene	4.3	0.07	0.2	ug/L	5.00		86.1	30-160	14.30	30	
Benzo(g,h,i)perylene	4.3	0.04	0.2	ug/L	5.00		86.9	30-160	13.90	30	
1-Methylnaphthalene	4.6	0.03	0.2	ug/L	5.00		91.4	30-160	13.10	30	
Surrogate: 2-Fluorophenol	4.69			ug/L	7.50		62.5	30-160			
Surrogate: Phenol-d5	3.08			ug/L	7.50		41.0	30-160			
Surrogate: 2-Chlorophenol-d4	7.63			ug/L	7.50		102	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	4.15			ug/L	5.00		83.0	30-160			
Surrogate: Nitrobenzene-d5	4.49			ug/L	5.00		89.7	30-160			
Surrogate: 2-Fluorobiphenyl	4.30			ug/L	5.00		86.1	30-160			
Surrogate: 2,4,6-Tribromophenol	8.19			ug/L	7.50		109	30-160			
Surrogate: p-Terphenyl-d14	4.39			ug/L	5.00		87.7	30-160			

Matrix Spike (BLB0678-MS1)											
Source: 23B0508-13											
						Prepared: 28-Feb-2023	Analyzed: 20-Mar-2023 23:31				
Phenol	1.6	0.01	0.2	ug/L	5.00	ND	32.3	30-160			
bis(2-chloroethyl) ether	4.4	0.03	0.2	ug/L	5.00	ND	89.0	30-160			
2-Chlorophenol	4.3	0.03	0.2	ug/L	5.00	ND	86.0	30-160			
1,3-Dichlorobenzene	3.5	0.03	0.2	ug/L	5.00	ND	70.4	30-160			
1,4-Dichlorobenzene	4.2	0.03	0.2	ug/L	5.00	ND	83.6	30-160			
1,2-Dichlorobenzene	3.8	0.03	0.2	ug/L	5.00	ND	75.7	30-160			
Benzyl Alcohol	2.8	0.02	0.2	ug/L	5.00	ND	55.9	30-160			
2,2'-Oxybis(1-chloropropane)	4.8	0.03	0.2	ug/L	5.00	ND	95.8	30-160			
2-Methylphenol	3.5	0.03	0.2	ug/L	5.00	ND	69.2	30-160			
Hexachloroethane	3.1	0.04	0.2	ug/L	5.00	ND	62.0	30-160			



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLB0678-MS1)											
Source: 23B0508-13				Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 23:31							
N-Nitroso-di-n-Propylamine	4.3	0.04	0.2	ug/L	5.00	ND	86.3	30-160			
4-Methylphenol	3.2	0.03	0.2	ug/L	5.00	ND	64.7	30-160			
Nitrobenzene	4.2	0.03	0.2	ug/L	5.00	ND	83.9	30-160			
Isophorone	6.1	0.03	0.2	ug/L	5.00	ND	121	30-160			
2-Nitrophenol	4.5	0.04	1.0	ug/L	5.00	ND	89.4	30-160			
2,4-Dimethylphenol	11.6	0.3	1.0	ug/L	13.0	ND	89.2	30-160			
Bis(2-Chloroethoxy)methane	5.1	0.03	0.2	ug/L	5.00	ND	101	30-160			
2,4-Dichlorophenol	15.8	0.1	1.0	ug/L	13.0	ND	122	30-160			
1,2,4-Trichlorobenzene	3.8	0.03	0.2	ug/L	5.00	ND	75.5	30-160			
Naphthalene	4.1	0.03	0.2	ug/L	5.00	ND	82.8	30-160			
Benzoic acid	13.7	0.1	2.0	ug/L	23.0	0.2	58.8	30-160			
4-Chloroaniline	0.6	0.04	1.0	ug/L	13.0	ND	4.29	30-160			*, J
Hexachlorobutadiene	3.2	0.04	0.2	ug/L	5.00	ND	64.6	30-160			
4-Chloro-3-Methylphenol	13.8	0.1	1.0	ug/L	13.0	ND	106	30-160			
2-Methylnaphthalene	4.1	0.03	0.2	ug/L	5.00	ND	82.4	30-160			
Hexachlorocyclopentadiene	7.0	0.1	1.0	ug/L	13.0	ND	53.9	30-160			
2,4,6-Trichlorophenol	14.6	0.2	1.0	ug/L	13.0	ND	112	30-160			
2,4,5-Trichlorophenol	13.8	0.1	1.0	ug/L	13.0	ND	106	30-160			
2-Chloronaphthalene	4.2	0.03	0.2	ug/L	5.00	ND	83.4	30-160			
2-Nitroaniline	12.2	0.2	1.0	ug/L	13.0	ND	94.1	30-160			
Acenaphthylene	4.3	0.02	0.2	ug/L	5.00	ND	85.0	30-160			
Dimethylphthalate	4.8	0.04	0.2	ug/L	5.00	ND	96.3	30-160			
2,6-Dinitrotoluene	14.5	0.2	1.0	ug/L	13.0	ND	111	30-160			
Acenaphthene	4.4	0.03	0.2	ug/L	5.00	ND	87.5	30-160			
3-Nitroaniline	8.4	0.2	1.0	ug/L	13.0	ND	64.6	30-160			
2,4-Dinitrophenol	20.8	0.2	2.0	ug/L	23.0	ND	90.4	30-160			Q
Dibenzofuran	4.4	0.02	0.2	ug/L	5.00	ND	87.4	30-160			
4-Nitrophenol	4.5	0.06	1.0	ug/L	13.0	ND	34.6	30-160			
2,4-Dinitrotoluene	13.3	0.1	1.0	ug/L	13.0	ND	102	30-160			
Fluorene	4.4	0.02	0.2	ug/L	5.00	ND	88.7	30-160			
4-Chlorophenylphenyl ether	4.7	0.02	0.2	ug/L	5.00	ND	94.3	30-160			
Diethyl phthalate	5.7	0.06	0.2	ug/L	5.00	0.07	112	30-160			
4-Nitroaniline	12.2	0.2	1.0	ug/L	13.0	ND	93.7	30-160			
4,6-Dinitro-2-methylphenol	24.4	0.4	2.0	ug/L	23.0	ND	106	30-160			
N-Nitrosodiphenylamine	4.5	0.03	0.2	ug/L	5.00	ND	89.2	30-160			



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Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLB0678-MS1)											
Source: 23B0508-13			Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 23:31								
4-Bromophenyl phenyl ether	5.1	0.02	0.2	ug/L	5.00	ND	102	30-160			
Hexachlorobenzene	4.7	0.04	0.2	ug/L	5.00	ND	94.5	30-160			
Pentachlorophenol	16.2	0.1	1.0	ug/L	13.0	ND	124	30-160			
Phenanthrene	4.4	0.02	0.2	ug/L	5.00	ND	88.5	30-160			
Anthracene	4.1	0.03	0.2	ug/L	5.00	ND	81.6	30-160			
Carbazole	4.7	0.04	0.2	ug/L	5.00	ND	94.5	30-160			
Di-n-Butylphthalate	5.1	0.05	0.2	ug/L	5.00	ND	103	30-160			B
Fluoranthene	4.1	0.03	0.2	ug/L	5.00	ND	81.7	30-160			
Pyrene	4.4	0.03	0.2	ug/L	5.00	ND	88.0	30-160			
Butylbenzylphthalate	4.9	0.07	0.2	ug/L	5.00	ND	98.2	30-160			
Benzo(a)anthracene	4.4	0.04	0.2	ug/L	5.00	ND	88.1	30-160			
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L	13.0	ND		30-160			*, U
Chrysene	4.3	0.04	0.2	ug/L	5.00	ND	86.0	30-160			
bis(2-Ethylhexyl)phthalate	4.3	0.2	0.2	ug/L	5.00	ND	86.8	30-160			
Di-n-Octylphthalate	4.5	0.05	0.2	ug/L	5.00	ND	89.1	30-160			
Benzofluoranthenes, Total	8.7	0.08	0.4	ug/L	10.0	ND	87.3	30-160			
Benzo(a)pyrene	4.4	0.05	0.2	ug/L	5.00	ND	89.0	30-160			
Indeno(1,2,3-cd)pyrene	4.4	0.06	0.2	ug/L	5.00	ND	88.6	30-160			
Dibenzo(a,h)anthracene	4.4	0.07	0.2	ug/L	5.00	ND	88.4	30-160			
Benzo(g,h,i)perylene	4.3	0.04	0.2	ug/L	5.00	ND	87.0	30-160			
1-Methylnaphthalene	4.4	0.03	0.2	ug/L	5.00	ND	88.5	30-160			
<i>Surrogate: 2-Fluorophenol</i>	3.75			ug/L	7.50	3.53	50.0	30-160			
<i>Surrogate: Phenol-d5</i>	2.39			ug/L	7.50	2.24	31.9	30-160			
<i>Surrogate: 2-Chlorophenol-d4</i>	6.64			ug/L	7.50	6.41	88.6	30-160			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	3.56			ug/L	5.00	3.59	71.1	30-160			
<i>Surrogate: Nitrobenzene-d5</i>	4.05			ug/L	5.00	4.05	81.0	30-160			
<i>Surrogate: 2-Fluorobiphenyl</i>	4.01			ug/L	5.00	3.95	80.2	30-160			
<i>Surrogate: 2,4,6-Tribromophenol</i>	8.19			ug/L	7.50	7.42	109	30-160			
<i>Surrogate: p-Terphenyl-d14</i>	4.14			ug/L	5.00	4.06	82.8	30-160			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLB0678-MSD1)											
Source: 23B0508-13			Prepared: 28-Feb-2023 Analyzed: 21-Mar-2023 00:10								
Phenol	1.6	0.01	0.2	ug/L	5.00	ND	31.6	30-160	2.09	30	
bis(2-chloroethyl) ether	4.3	0.03	0.2	ug/L	5.00	ND	85.5	30-160	3.99	30	



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLB0678-MSD1)											
Source: 23B0508-13			Prepared: 28-Feb-2023 Analyzed: 21-Mar-2023 00:10								
2-Chlorophenol	4.2	0.03	0.2	ug/L	5.00	ND	83.0	30-160	3.52	30	
1,3-Dichlorobenzene	3.4	0.03	0.2	ug/L	5.00	ND	68.9	30-160	2.24	30	
1,4-Dichlorobenzene	4.1	0.03	0.2	ug/L	5.00	ND	81.4	30-160	2.77	30	
1,2-Dichlorobenzene	3.7	0.03	0.2	ug/L	5.00	ND	73.5	30-160	2.92	30	
Benzyl Alcohol	2.8	0.02	0.2	ug/L	5.00	ND	55.5	30-160	0.78	30	
2,2'-Oxybis(1-chloropropane)	4.6	0.03	0.2	ug/L	5.00	ND	92.1	30-160	3.88	30	
2-Methylphenol	3.4	0.03	0.2	ug/L	5.00	ND	68.8	30-160	0.62	30	
Hexachloroethane	3.0	0.04	0.2	ug/L	5.00	ND	61.0	30-160	1.60	30	
N-Nitroso-di-n-Propylamine	4.2	0.04	0.2	ug/L	5.00	ND	84.7	30-160	1.88	30	
4-Methylphenol	3.3	0.03	0.2	ug/L	5.00	ND	65.1	30-160	0.52	30	
Nitrobenzene	4.2	0.03	0.2	ug/L	5.00	ND	83.7	30-160	0.21	30	
Isophorone	6.2	0.03	0.2	ug/L	5.00	ND	124	30-160	1.92	30	
2-Nitrophenol	4.5	0.04	1.0	ug/L	5.00	ND	89.9	30-160	0.53	30	
2,4-Dimethylphenol	11.8	0.3	1.0	ug/L	13.0	ND	91.0	30-160	2.09	30	
Bis(2-Chloroethoxy)methane	5.0	0.03	0.2	ug/L	5.00	ND	100	30-160	0.67	30	
2,4-Dichlorophenol	16.0	0.1	1.0	ug/L	13.0	ND	123	30-160	0.81	30	
1,2,4-Trichlorobenzene	3.8	0.03	0.2	ug/L	5.00	ND	75.1	30-160	0.51	30	
Naphthalene	4.1	0.03	0.2	ug/L	5.00	ND	81.5	30-160	1.54	30	
Benzoic acid	13.6	0.1	2.0	ug/L	23.0	0.2	58.3	30-160	0.81	30	
4-Chloroaniline	1.1	0.04	1.0	ug/L	13.0	ND	8.80	30-160	68.80	30	*
Hexachlorobutadiene	3.2	0.04	0.2	ug/L	5.00	ND	64.8	30-160	0.20	30	
4-Chloro-3-Methylphenol	13.9	0.1	1.0	ug/L	13.0	ND	107	30-160	0.74	30	
2-Methylnaphthalene	4.2	0.03	0.2	ug/L	5.00	ND	83.0	30-160	0.77	30	
Hexachlorocyclopentadiene	7.3	0.1	1.0	ug/L	13.0	ND	56.4	30-160	4.45	30	
2,4,6-Trichlorophenol	14.8	0.2	1.0	ug/L	13.0	ND	114	30-160	1.54	30	
2,4,5-Trichlorophenol	13.9	0.1	1.0	ug/L	13.0	ND	107	30-160	0.38	30	
2-Chloronaphthalene	4.1	0.03	0.2	ug/L	5.00	ND	82.6	30-160	1.01	30	
2-Nitroaniline	12.2	0.2	1.0	ug/L	13.0	ND	93.9	30-160	0.29	30	
Acenaphthylene	4.3	0.02	0.2	ug/L	5.00	ND	86.5	30-160	1.77	30	
Dimethylphthalate	4.9	0.04	0.2	ug/L	5.00	ND	97.7	30-160	1.42	30	
2,6-Dinitrotoluene	14.5	0.2	1.0	ug/L	13.0	ND	112	30-160	0.58	30	
Acenaphthene	4.4	0.03	0.2	ug/L	5.00	ND	87.9	30-160	0.49	30	
3-Nitroaniline	9.7	0.2	1.0	ug/L	13.0	ND	74.6	30-160	14.30	30	
2,4-Dinitrophenol	20.8	0.2	2.0	ug/L	23.0	ND	90.6	30-160	0.18	30	Q
Dibenzofuran	4.3	0.02	0.2	ug/L	5.00	ND	86.8	30-160	0.70	30	



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLB0678-MSD1)											
Source: 23B0508-13				Prepared: 28-Feb-2023 Analyzed: 21-Mar-2023 00:10							
4-Nitrophenol	4.5	0.06	1.0	ug/L	13.0	ND	34.5	30-160	0.25	30	
2,4-Dinitrotoluene	13.4	0.1	1.0	ug/L	13.0	ND	103	30-160	0.98	30	
Fluorene	4.5	0.02	0.2	ug/L	5.00	ND	90.2	30-160	1.64	30	
4-Chlorophenylphenyl ether	4.7	0.02	0.2	ug/L	5.00	ND	94.2	30-160	0.14	30	
Diethyl phthalate	5.9	0.06	0.2	ug/L	5.00	0.07	117	30-160	4.70	30	
4-Nitroaniline	12.5	0.2	1.0	ug/L	13.0	ND	96.0	30-160	2.45	30	
4,6-Dinitro-2-methylphenol	24.7	0.4	2.0	ug/L	23.0	ND	107	30-160	0.97	30	
N-Nitrosodiphenylamine	4.6	0.03	0.2	ug/L	5.00	ND	93.0	30-160	4.17	30	
4-Bromophenyl phenyl ether	5.3	0.02	0.2	ug/L	5.00	ND	105	30-160	3.01	30	
Hexachlorobenzene	4.8	0.04	0.2	ug/L	5.00	ND	95.6	30-160	1.18	30	
Pentachlorophenol	16.4	0.1	1.0	ug/L	13.0	ND	126	30-160	1.47	30	
Phenanthrene	4.6	0.02	0.2	ug/L	5.00	ND	91.0	30-160	2.80	30	
Anthracene	4.3	0.03	0.2	ug/L	5.00	ND	85.1	30-160	4.25	30	
Carbazole	4.9	0.04	0.2	ug/L	5.00	ND	97.0	30-160	2.59	30	
Di-n-Butylphthalate	5.4	0.05	0.2	ug/L	5.00	ND	108	30-160	4.49	30	B
Fluoranthene	4.2	0.03	0.2	ug/L	5.00	ND	83.6	30-160	2.35	30	
Pyrene	4.1	0.03	0.2	ug/L	5.00	ND	81.4	30-160	7.81	30	
Butylbenzylphthalate	5.0	0.07	0.2	ug/L	5.00	ND	101	30-160	2.49	30	
Benzo(a)anthracene	4.5	0.04	0.2	ug/L	5.00	ND	90.4	30-160	2.58	30	
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L	13.0	ND		30-160			*, U
Chrysene	4.3	0.04	0.2	ug/L	5.00	ND	86.7	30-160	0.82	30	
bis(2-Ethylhexyl)phthalate	4.6	0.2	0.2	ug/L	5.00	ND	91.1	30-160	4.81	30	
Di-n-Octylphthalate	4.6	0.05	0.2	ug/L	5.00	ND	92.8	30-160	4.03	30	
Benzo(a)fluoranthene, Total	9.1	0.08	0.4	ug/L	10.0	ND	90.7	30-160	3.74	30	
Benzo(a)pyrene	4.7	0.05	0.2	ug/L	5.00	ND	93.6	30-160	5.06	30	
Indeno(1,2,3-cd)pyrene	4.6	0.06	0.2	ug/L	5.00	ND	91.7	30-160	3.41	30	
Dibenzo(a,h)anthracene	4.6	0.07	0.2	ug/L	5.00	ND	91.4	30-160	3.34	30	
Benzo(g,h,i)perylene	4.6	0.04	0.2	ug/L	5.00	ND	91.5	30-160	5.13	30	
1-Methylnaphthalene	4.4	0.03	0.2	ug/L	5.00	ND	87.7	30-160	0.98	30	
Surrogate: 2-Fluorophenol	3.58			ug/L	7.50	3.53	47.7	30-160			
Surrogate: Phenol-d5	2.33			ug/L	7.50	2.24	31.1	30-160			
Surrogate: 2-Chlorophenol-d4	5.84			ug/L	7.50	6.41	77.8	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	3.29			ug/L	5.00	3.59	65.8	30-160			
Surrogate: Nitrobenzene-d5	3.97			ug/L	5.00	4.05	79.5	30-160			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Detection Result	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLB0678-MSD1)		Source: 23B0508-13		Prepared: 28-Feb-2023		Analyzed: 21-Mar-2023 00:10				
<i>Surrogate: 2-Fluorobiphenyl</i>	3.90		ug/L	5.00	3.95	78.0	30-160			
<i>Surrogate: 2,4,6-Tribromophenol</i>	8.09		ug/L	7.50	7.42	108	30-160			
<i>Surrogate: p-Terphenyl-d14</i>	4.08		ug/L	5.00	4.06	81.6	30-160			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLB0676 - EPA 8270E-SIM

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0676-BLK1)											
						Prepared: 01-Mar-2023 Analyzed: 09-Mar-2023 11:07					
Naphthalene	0.005	0.001	0.010	ug/L							J
2-Methylnaphthalene	0.003	0.001	0.010	ug/L							J
1-Methylnaphthalene	0.002	0.0009	0.010	ug/L							J
Acenaphthylene	ND	0.002	0.010	ug/L							U
Acenaphthene	ND	0.003	0.010	ug/L							U
Dibenzofuran	0.002	0.002	0.010	ug/L							J
Fluorene	ND	0.002	0.010	ug/L							U
Phenanthrene	0.002	0.001	0.010	ug/L							J
Anthracene	ND	0.001	0.010	ug/L							U
Carbazole	ND	0.001	0.010	ug/L							U
Fluoranthene	ND	0.002	0.010	ug/L							U
Pyrene	0.001	0.001	0.010	ug/L							J
Benzo(a)anthracene	0.0008	0.0008	0.010	ug/L							J
Chrysene	ND	0.0009	0.010	ug/L							U
Benzo(b)fluoranthene	ND	0.0005	0.010	ug/L							U
Benzo(k)fluoranthene	ND	0.003	0.010	ug/L							U
Benzo(j)fluoranthene	ND	0.002	0.010	ug/L							U
Benzofluoranthenes, Total	ND	0.004	0.010	ug/L							U
Benzo(a)pyrene	ND	0.002	0.010	ug/L							U
Perylene	ND	0.006	0.010	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.001	0.010	ug/L							U
Dibenzo(a,h)anthracene	ND	0.001	0.010	ug/L							U
Benzo(g,h,i)perylene	ND	0.001	0.010	ug/L							U
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.151			ug/L	0.300		50.3	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.0897			ug/L	0.300		29.9	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.177			ug/L	0.300		58.9	57-120			

LCS (BLB0676-BS1)											
						Prepared: 01-Mar-2023 Analyzed: 09-Mar-2023 11:39					
Naphthalene	0.179	0.001	0.010	ug/L	0.300		59.8	37-120			
2-Methylnaphthalene	0.187	0.001	0.010	ug/L	0.300		62.4	37-120			
1-Methylnaphthalene	0.184	0.0009	0.010	ug/L	0.300		61.3	29-120			
Acenaphthylene	0.184	0.002	0.010	ug/L	0.300		61.3	41-120			
Acenaphthene	0.198	0.003	0.010	ug/L	0.300		66.0	41-120			
Dibenzofuran	0.208	0.002	0.010	ug/L	0.300		69.2	38-120			
Fluorene	0.207	0.002	0.010	ug/L	0.300		69.0	43-120			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLB0676 - EPA 8270E-SIM

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLB0676-BS1)						Prepared: 01-Mar-2023 Analyzed: 09-Mar-2023 11:39					
Phenanthrene	0.213	0.001	0.010	ug/L	0.300		71.2	41-120			
Anthracene	0.201	0.001	0.010	ug/L	0.300		67.0	40-120			
Carbazole	0.217	0.001	0.010	ug/L	0.300		72.3	30-160			
Fluoranthene	0.222	0.002	0.010	ug/L	0.300		74.1	45-120			
Pyrene	0.216	0.001	0.010	ug/L	0.300		71.9	41-120			
Benzo(a)anthracene	0.212	0.0008	0.010	ug/L	0.300		70.5	42-120			
Chrysene	0.230	0.0009	0.010	ug/L	0.300		76.7	44-120			
Benzo(b)fluoranthene	0.234	0.0005	0.010	ug/L	0.300		77.9	44-120			
Benzo(k)fluoranthene	0.241	0.003	0.010	ug/L	0.300		80.2	50-120			
Benzo(j)fluoranthene	0.270	0.002	0.010	ug/L	0.300		90.1	39-160			
Benzofluoranthenes, Total	0.745	0.004	0.010	ug/L	0.900		82.7	46-120			
Benzo(a)pyrene	0.167	0.002	0.010	ug/L	0.300		55.5	35-120			
Perylene	0.030	0.006	0.010	ug/L	0.300		10.0	30-160			*
Indeno(1,2,3-cd)pyrene	0.161	0.001	0.010	ug/L	0.300		53.7	37-120			
Dibenzo(a,h)anthracene	0.158	0.001	0.010	ug/L	0.300		52.7	34-120			
Benzo(g,h,i)perylene	0.147	0.001	0.010	ug/L	0.300		48.9	38-120			Q
Surrogate: 2-Methylnaphthalene-d10	0.147			ug/L	0.300		49.1	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.108			ug/L	0.300		35.8	29-120			
Surrogate: Fluoranthene-d10	0.180			ug/L	0.300		59.9	57-120			
LCS Dup (BLB0676-BSD1)						Prepared: 01-Mar-2023 Analyzed: 09-Mar-2023 12:10					
Naphthalene	0.203	0.001	0.010	ug/L	0.300		67.7	37-120	12.40	30	
2-Methylnaphthalene	0.208	0.001	0.010	ug/L	0.300		69.5	37-120	10.60	30	
1-Methylnaphthalene	0.207	0.0009	0.010	ug/L	0.300		68.9	29-120	11.70	30	
Acenaphthylene	0.202	0.002	0.010	ug/L	0.300		67.3	41-120	9.24	30	
Acenaphthene	0.217	0.003	0.010	ug/L	0.300		72.4	41-120	9.25	30	
Dibenzofuran	0.223	0.002	0.010	ug/L	0.300		74.4	38-120	7.17	30	
Fluorene	0.219	0.002	0.010	ug/L	0.300		73.0	43-120	5.72	30	
Phenanthrene	0.225	0.001	0.010	ug/L	0.300		74.9	41-120	5.11	30	
Anthracene	0.217	0.001	0.010	ug/L	0.300		72.3	40-120	7.55	30	
Carbazole	0.228	0.001	0.010	ug/L	0.300		76.0	30-160	4.94	30	
Fluoranthene	0.231	0.002	0.010	ug/L	0.300		76.9	45-120	3.67	30	
Pyrene	0.225	0.001	0.010	ug/L	0.300		75.0	41-120	4.22	30	
Benzo(a)anthracene	0.226	0.0008	0.010	ug/L	0.300		75.3	42-120	6.53	30	
Chrysene	0.243	0.0009	0.010	ug/L	0.300		81.1	44-120	5.56	30	



Aspect Consulting, LLC.
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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLB0676 - EPA 8270E-SIM

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLB0676-BSD1)						Prepared: 01-Mar-2023 Analyzed: 09-Mar-2023 12:10					
Benzo(b)fluoranthene	0.232	0.0005	0.010	ug/L	0.300		77.5	44-120	0.52	30	
Benzo(k)fluoranthene	0.244	0.003	0.010	ug/L	0.300		81.4	50-120	1.43	30	
Benzo(j)fluoranthene	0.273	0.002	0.010	ug/L	0.300		91.0	39-160	1.04	30	
Benzofluoranthenes, Total	0.750	0.004	0.010	ug/L	0.900		83.3	46-120	0.68	30	
Benzo(a)pyrene	0.217	0.002	0.010	ug/L	0.300		72.3	35-120	26.20	30	
Perylene	0.155	0.006	0.010	ug/L	0.300		51.8	30-160	135.00	30	*
Indeno(1,2,3-cd)pyrene	0.169	0.001	0.010	ug/L	0.300		56.4	37-120	4.91	30	
Dibenzo(a,h)anthracene	0.167	0.001	0.010	ug/L	0.300		55.7	34-120	5.47	30	
Benzo(g,h,i)perylene	0.154	0.001	0.010	ug/L	0.300		51.2	38-120	4.56	30	Q
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.161			ug/L	0.300		53.7	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.108			ug/L	0.300		36.1	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.181			ug/L	0.300		60.3	57-120			

Matrix Spike (BLB0676-MS1)		Source: 23B0508-13		Prepared: 01-Mar-2023		Analyzed: 09-Mar-2023 16:23		
Naphthalene	0.201	0.001	0.010	ug/L	0.300	0.006	65.0	37-120
2-Methylnaphthalene	0.211	0.001	0.010	ug/L	0.300	0.004	69.0	37-120
1-Methylnaphthalene	0.207	0.0009	0.010	ug/L	0.300	0.002	68.1	29-120
Acenaphthylene	0.206	0.002	0.010	ug/L	0.300	ND	68.8	41-120
Acenaphthene	0.216	0.003	0.010	ug/L	0.300	ND	71.9	41-120
Dibenzofuran	0.219	0.002	0.010	ug/L	0.300	0.002	72.3	38-120
Fluorene	0.221	0.002	0.010	ug/L	0.300	ND	73.5	43-120
Phenanthrene	0.222	0.001	0.010	ug/L	0.300	0.004	72.6	41-120
Anthracene	0.224	0.001	0.010	ug/L	0.300	0.002	74.1	40-120
Carbazole	0.234	0.001	0.010	ug/L	0.300	ND	78.1	30-160
Fluoranthene	0.231	0.002	0.010	ug/L	0.300	0.003	76.2	45-120
Pyrene	0.226	0.001	0.010	ug/L	0.300	0.003	74.3	41-120
Benzo(a)anthracene	0.228	0.0008	0.010	ug/L	0.300	0.001	75.7	42-120
Chrysene	0.241	0.0009	0.010	ug/L	0.300	0.002	79.6	44-120
Benzo(b)fluoranthene	0.226	0.0005	0.010	ug/L	0.300	0.0008	75.1	44-120
Benzo(k)fluoranthene	0.250	0.003	0.010	ug/L	0.300	ND	83.3	50-120
Benzo(j)fluoranthene	0.254	0.002	0.010	ug/L	0.300	ND	84.5	39-160
Benzofluoranthenes, Total	0.730	0.004	0.010	ug/L	0.900	ND	81.1	46-120
Benzo(a)pyrene	0.223	0.002	0.010	ug/L	0.300	ND	74.4	35-120
Perylene	0.189	0.006	0.010	ug/L	0.300	ND	63.0	30-160
Indeno(1,2,3-cd)pyrene	0.171	0.001	0.010	ug/L	0.300	ND	57.0	37-120



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLB0676 - EPA 8270E-SIM

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLB0676-MS1)											
			Source: 23B0508-13			Prepared: 01-Mar-2023			Analyzed: 09-Mar-2023 16:23		
Dibenzo(a,h)anthracene	0.171	0.001	0.010	ug/L	0.300	ND	57.0	34-120			
Benzo(g,h,i)perylene	0.153	0.001	0.010	ug/L	0.300	ND	51.0	38-120			Q
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.161			ug/L	0.300	0.152	53.5	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.113			ug/L	0.300	0.0977	37.7	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.185			ug/L	0.300	0.175	61.6	57-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLB0676-MSD1)											
			Source: 23B0508-13			Prepared: 01-Mar-2023			Analyzed: 09-Mar-2023 16:55		
Naphthalene	0.219	0.001	0.010	ug/L	0.300	0.006	71.0	37-120	8.68	30	
2-Methylnaphthalene	0.223	0.001	0.010	ug/L	0.300	0.004	73.0	37-120	5.55	30	
1-Methylnaphthalene	0.219	0.0009	0.010	ug/L	0.300	0.002	72.1	29-120	5.64	30	
Acenaphthylene	0.212	0.002	0.010	ug/L	0.300	ND	70.8	41-120	2.84	30	
Acenaphthene	0.224	0.003	0.010	ug/L	0.300	ND	74.7	41-120	3.74	30	
Dibenzofuran	0.225	0.002	0.010	ug/L	0.300	0.002	74.2	38-120	2.54	30	
Fluorene	0.227	0.002	0.010	ug/L	0.300	ND	75.7	43-120	2.89	30	
Phenanthrene	0.226	0.001	0.010	ug/L	0.300	0.004	73.9	41-120	1.78	30	
Anthracene	0.233	0.001	0.010	ug/L	0.300	0.002	77.2	40-120	4.07	30	
Carbazole	0.236	0.001	0.010	ug/L	0.300	ND	78.8	30-160	0.85	30	
Fluoranthene	0.232	0.002	0.010	ug/L	0.300	0.003	76.5	45-120	0.29	30	
Pyrene	0.226	0.001	0.010	ug/L	0.300	0.003	74.2	41-120	0.13	30	
Benzo(a)anthracene	0.227	0.0008	0.010	ug/L	0.300	0.001	75.4	42-120	0.44	30	
Chrysene	0.239	0.0009	0.010	ug/L	0.300	0.002	79.2	44-120	0.49	30	
Benzo(b)fluoranthene	0.222	0.0005	0.010	ug/L	0.300	0.0008	73.7	44-120	1.90	30	
Benzo(k)fluoranthene	0.253	0.003	0.010	ug/L	0.300	ND	84.3	50-120	1.13	30	
Benzo(j)fluoranthene	0.254	0.002	0.010	ug/L	0.300	ND	84.6	39-160	0.04	30	
Benzofluoranthenes, Total	0.729	0.004	0.010	ug/L	0.900	ND	80.9	46-120	0.18	30	
Benzo(a)pyrene	0.231	0.002	0.010	ug/L	0.300	ND	77.1	35-120	3.48	30	
Perylene	0.234	0.006	0.010	ug/L	0.300	ND	78.0	30-160	21.20	30	
Indeno(1,2,3-cd)pyrene	0.167	0.001	0.010	ug/L	0.300	ND	55.8	37-120	2.15	30	
Dibenzo(a,h)anthracene	0.166	0.001	0.010	ug/L	0.300	ND	55.5	34-120	2.70	30	
Benzo(g,h,i)perylene	0.151	0.001	0.010	ug/L	0.300	ND	50.2	38-120	1.53	30	Q
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.168			ug/L	0.300	0.152	56.0	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.108			ug/L	0.300	0.0977	35.9	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.183			ug/L	0.300	0.175	60.9	57-120			



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLB0676 - EPA 8270E-SIM

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Detection Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BLB0675 - NWTPH-Dx

Instrument: FID4 Analyst: AA

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0675-BLK1)		Prepared: 28-Feb-2023 Analyzed: 06-Mar-2023 12:34								
Diesel Range Organics (C12-C24)	ND	0.100	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L							U
<i>Surrogate: o-Terphenyl</i>	0.195		mg/L	0.225		86.6	50-150			
LCS (BLB0675-BS1)		Prepared: 28-Feb-2023 Analyzed: 06-Mar-2023 12:53								
Diesel Range Organics (C12-C24)	2.61	0.100	mg/L	3.00		86.8	56-120			
<i>Surrogate: o-Terphenyl</i>	0.207		mg/L	0.225		92.0	50-150			
LCS Dup (BLB0675-BSD1)		Prepared: 28-Feb-2023 Analyzed: 06-Mar-2023 13:13								
Diesel Range Organics (C12-C24)	2.65	0.100	mg/L	3.00		88.4	56-120	1.79	30	
<i>Surrogate: o-Terphenyl</i>	0.209		mg/L	0.225		92.8	50-150			
Matrix Spike (BLB0675-MS1)		Source: 23B0508-13		Prepared: 28-Feb-2023 Analyzed: 06-Mar-2023 15:53						
Diesel Range Organics (C12-C24)	2.53	0.100	mg/L	3.00	ND	82.3	56-120			
<i>Surrogate: o-Terphenyl</i>	0.199		mg/L	0.225	0.203	88.4	50-150			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLB0675-MSD1)		Source: 23B0508-13		Prepared: 28-Feb-2023 Analyzed: 06-Mar-2023 16:12						
Diesel Range Organics (C12-C24)	2.81	0.100	mg/L	3.00	ND	91.9	56-120	10.80	30	
<i>Surrogate: o-Terphenyl</i>	0.218		mg/L	0.225	0.203	96.9	50-150			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BLB0677 - EPA 8082A

Instrument: ECD7 Analyst: RJL

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0677-BLK1)											
						Prepared: 02-Mar-2023	Analyzed: 10-Mar-2023 12:59				
Aroclor 1016	ND	0.002	0.010	ug/L							U
Aroclor 1221	ND	0.002	0.010	ug/L							U
Aroclor 1232	ND	0.002	0.010	ug/L							U
Aroclor 1242	ND	0.002	0.010	ug/L							U
Aroclor 1248	ND	0.002	0.010	ug/L							U
Aroclor 1254	ND	0.002	0.010	ug/L							U
Aroclor 1260	ND	0.003	0.010	ug/L							U
Aroclor 1262	ND	0.003	0.010	ug/L							U
Aroclor 1268	ND	0.003	0.010	ug/L							U
<i>Surrogate: Decachlorobiphenyl</i>	0.00998			ug/L	0.0200	49.9		29-120			
<i>Surrogate: Tetrachlorometaxylyene</i>	0.00967			ug/L	0.0200	48.4		32-120			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.00967			ug/L	0.0200	48.4		29-120			
<i>Surrogate: Tetrachlorometaxylyene [2C]</i>	0.00913			ug/L	0.0200	45.7		32-120			
LCS (BLB0677-BS1)											
						Prepared: 02-Mar-2023	Analyzed: 10-Mar-2023 13:20				
Aroclor 1016	0.030	0.002	0.010	ug/L	0.0500	60.4		54-120			
Aroclor 1260	0.031	0.003	0.010	ug/L	0.0500	62.2		51-128			
<i>Surrogate: Decachlorobiphenyl</i>	0.00964			ug/L	0.0200	48.2		29-120			
<i>Surrogate: Tetrachlorometaxylyene</i>	0.00908			ug/L	0.0200	45.4		32-120			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.00924			ug/L	0.0200	46.2		29-120			
<i>Surrogate: Tetrachlorometaxylyene [2C]</i>	0.00812			ug/L	0.0200	40.6		32-120			
LCS Dup (BLB0677-BSD1)											
						Prepared: 02-Mar-2023	Analyzed: 10-Mar-2023 13:41				
Aroclor 1016 [2C]	0.031	0.002	0.010	ug/L	0.0500	62.8		54-120	9.89	30	
Aroclor 1260	0.033	0.003	0.010	ug/L	0.0500	65.8		51-128	5.53	30	
<i>Surrogate: Decachlorobiphenyl</i>	0.00993			ug/L	0.0200	49.7		29-120			
<i>Surrogate: Tetrachlorometaxylyene</i>	0.00944			ug/L	0.0200	47.2		32-120			
<i>Surrogate: Decachlorobiphenyl [2C]</i>	0.00980			ug/L	0.0200	49.0		29-120			
<i>Surrogate: Tetrachlorometaxylyene [2C]</i>	0.00868			ug/L	0.0200	43.4		32-120			
Matrix Spike (BLB0677-MS1)											
			Source: 23B0508-13					Prepared: 02-Mar-2023 Analyzed: 10-Mar-2023 16:28			
Aroclor 1016	0.024	0.002	0.010	ug/L	0.0500	ND	47.4	54-120			
Aroclor 1260	0.026	0.003	0.010	ug/L	0.0500	ND	51.9	51-128			
<i>Surrogate: Decachlorobiphenyl</i>	0.00788			ug/L	0.0200	39.4		29-120			



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Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BLB0677 - EPA 8082A

Instrument: ECD7 Analyst: RJL

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLB0677-MS1)		Source: 23B0508-13			Prepared: 02-Mar-2023		Analyzed: 10-Mar-2023 16:28				
Surrogate: Tetrachlorometaxylene	0.00777			ug/L	0.0200		38.8	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.00778			ug/L	0.0200		38.9	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.00749			ug/L	0.0200		37.4	32-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLB0677-MSD1)		Source: 23B0508-13			Prepared: 02-Mar-2023		Analyzed: 10-Mar-2023 16:49				
Aroclor 1016	0.031	0.002	0.010	ug/L	0.0500	ND	62.0	54-120	25.40	30	
Aroclor 1260	0.028	0.003	0.010	ug/L	0.0500	ND	56.0	51-128	9.34	30	
Surrogate: Decachlorobiphenyl	0.00853			ug/L	0.0200		42.6	29-120			
Surrogate: Tetrachlorometaxylene	0.00963			ug/L	0.0200		48.1	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.00829			ug/L	0.0200		41.5	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.00912			ug/L	0.0200		45.6	32-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 29-Mar-2023 20:25
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLC0112 - EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLC0112-BLK1)						Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 13:02					
Mercury	ND	0.000013	0.000100	mg/L							U
LCS (BLC0112-BS1)						Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 13:05					
Mercury	0.00184	0.000013	0.000100	mg/L	0.00200		92.2	80-120			
Duplicate (BLC0112-DUP1)						Source: 23B0508-13 Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 13:09					
Mercury	ND	0.000013	0.000100	mg/L		ND					U
Matrix Spike (BLC0112-MS1)						Source: 23B0508-13 Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 13:12					
Mercury	0.000957	0.000013	0.000100	mg/L	0.00100	ND	95.7	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLC0112-MSD1)						Source: 23B0508-13 Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 13:19					
Mercury	0.000981	0.000013	0.000100	mg/L	0.00100	ND	98.1	75-125	2.47	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLC0206 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLC0206-BLK1)						Prepared: 08-Mar-2023 Analyzed: 10-Mar-2023 17:09						
Antimony	121	ND	0.101	0.200	ug/L							U
Beryllium	9	ND	0.0171	0.200	ug/L							U
Chromium	52	ND	0.260	0.500	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Silver	107	ND	0.0220	0.200	ug/L							U
Thallium	205	ND	0.0234	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
Cadmium	111	ND	0.0300	0.100	ug/L							U
Copper	63	ND	0.173	0.500	ug/L							U
Nickel	60	ND	0.0792	0.500	ug/L							U
Selenium	78	ND	0.179	0.500	ug/L							U
Zinc	66	ND	2.92	6.00	ug/L							U

LCS (BLC0206-BS1)						Prepared: 08-Mar-2023 Analyzed: 10-Mar-2023 17:14						
Antimony	121	25.2	0.101	0.200	ug/L	25.0		101	80-120			
Beryllium	9	24.2	0.0171	0.200	ug/L	25.0		96.7	80-120			
Chromium	52	25.2	0.260	0.500	ug/L	25.0		101	80-120			
Lead	208	25.9	0.0513	0.100	ug/L	25.0		104	80-120			
Silver	107	24.8	0.0220	0.200	ug/L	25.0		99.3	80-120			
Thallium	205	25.4	0.0234	0.200	ug/L	25.0		102	80-120			
Arsenic	75a	24.6	0.0373	0.200	ug/L	25.0		98.3	80-120			
Cadmium	111	25.7	0.0300	0.100	ug/L	25.0		103	80-120			
Copper	63	25.4	0.173	0.500	ug/L	25.0		102	80-120			
Nickel	60	25.1	0.0792	0.500	ug/L	25.0		100	80-120			
Selenium	78	80.6	0.179	0.500	ug/L	80.0		101	80-120			
Zinc	66	81.2	2.92	6.00	ug/L	80.0		101	80-120			

Duplicate (BLC0206-DUP1)						Source: 23B0508-13 Prepared: 08-Mar-2023 Analyzed: 11-Mar-2023 07:03						
Antimony	121	ND	0.101	0.200	ug/L		ND					U
Beryllium	9	ND	0.0171	0.200	ug/L		ND					U
Lead	208	ND	0.0513	0.100	ug/L		ND					U
Silver	107	ND	0.0220	0.200	ug/L		ND					U
Thallium	205	ND	0.0234	0.200	ug/L		ND					U
Arsenic	75a	2.00	0.0373	0.200	ug/L		1.95			2.63	20	
Cadmium	111	ND	0.0300	0.100	ug/L		ND					U



Aspect Consulting, LLC.
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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLC0206 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BLC0206-DUP1)		Source: 23B0508-13			Prepared: 08-Mar-2023		Analyzed: 11-Mar-2023 07:03					
Copper	63	0.222	0.173	0.500	ug/L		0.182			19.80	20	J
Nickel	60	0.319	0.0792	0.500	ug/L		0.307			3.83	20	J
Selenium	78	ND	0.179	0.500	ug/L		ND					U
Zinc	66	ND	2.92	6.00	ug/L		ND					U

Duplicate (BLC0206-DUP2)		Source: 23B0508-13			Prepared: 08-Mar-2023		Analyzed: 14-Mar-2023 02:21					
Chromium	52	ND	0.520	1.00	ug/L		ND					U

Matrix Spike (BLC0206-MS1)		Source: 23B0508-13			Prepared: 08-Mar-2023		Analyzed: 11-Mar-2023 07:09					
Antimony	121	26.2	0.101	0.200	ug/L	25.0	ND	105	75-125			
Beryllium	9	25.6	0.0171	0.200	ug/L	25.0	ND	103	75-125			
Lead	208	25.8	0.0513	0.100	ug/L	25.0	ND	103	75-125			
Silver	107	25.4	0.0220	0.200	ug/L	25.0	ND	101	75-125			
Thallium	205	25.6	0.0234	0.200	ug/L	25.0	ND	103	75-125			
Arsenic	75a	27.8	0.0373	0.200	ug/L	25.0	1.95	103	75-125			
Cadmium	111	26.0	0.0300	0.100	ug/L	25.0	ND	104	75-125			
Copper	63	26.4	0.173	0.500	ug/L	25.0	0.182	105	75-125			
Nickel	60	26.3	0.0792	0.500	ug/L	25.0	0.307	104	75-125			
Selenium	78	77.2	0.179	0.500	ug/L	80.0	ND	96.6	75-125			
Zinc	66	79.1	2.92	6.00	ug/L	80.0	ND	98.8	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BLC0206-MS2)		Source: 23B0508-13			Prepared: 08-Mar-2023		Analyzed: 14-Mar-2023 02:25					
Chromium	52	25.0	0.520	1.00	ug/L	25.0	ND	99.8	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLC0206-MSD1)		Source: 23B0508-13			Prepared: 08-Mar-2023		Analyzed: 11-Mar-2023 07:15					
Antimony	121	26.4	0.101	0.200	ug/L	25.0	ND	106	75-125	0.87	20	
Beryllium	9	25.5	0.0171	0.200	ug/L	25.0	ND	102	75-125	0.51	20	
Lead	208	26.1	0.0513	0.100	ug/L	25.0	ND	104	75-125	1.06	20	
Silver	107	25.4	0.0220	0.200	ug/L	25.0	ND	102	75-125	0.33	20	
Thallium	205	26.5	0.0234	0.200	ug/L	25.0	ND	106	75-125	3.25	20	
Arsenic	75a	27.4	0.0373	0.200	ug/L	25.0	1.95	102	75-125	1.53	20	
Cadmium	111	26.1	0.0300	0.100	ug/L	25.0	ND	104	75-125	0.23	20	
Copper	63	25.7	0.173	0.500	ug/L	25.0	0.182	102	75-125	2.63	20	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 29-Mar-2023 20:25
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLC0206 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLC0206-MSD1)		Source: 23B0508-13			Prepared: 08-Mar-2023		Analyzed: 11-Mar-2023 07:15					
Nickel	60	25.6	0.0792	0.500	ug/L	25.0	0.307	101	75-125	2.76	20	
Selenium	78	74.8	0.179	0.500	ug/L	80.0	ND	93.5	75-125	3.20	20	
Zinc	66	76.7	2.92	6.00	ug/L	80.0	ND	95.9	75-125	3.05	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLC0206-MSD2)		Source: 23B0508-13			Prepared: 08-Mar-2023		Analyzed: 14-Mar-2023 02:31					
Chromium	52	24.1	0.520	1.00	ug/L	25.0	ND	96.2	75-125	3.70	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 29-Mar-2023 20:25
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLC0113 - EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLC0113-BLK1)						Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 13:51					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L							U
LCS (BLC0113-BS1)						Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 13:54					
Mercury, Dissolved	0.00182	0.000013	0.000100	mg/L	0.00200		91.0	80-120			
Duplicate (BLC0113-DUP1)						Source: 23B0508-14 Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 13:58					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L		ND					U
Matrix Spike (BLC0113-MS1)						Source: 23B0508-14 Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 14:01					
Mercury, Dissolved	0.00104	0.000013	0.000100	mg/L	0.00100	ND	104	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLC0113-MSD1)						Source: 23B0508-14 Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 14:03					
Mercury, Dissolved	0.000949	0.000013	0.000100	mg/L	0.00100	ND	94.9	75-125	9.65	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLC0207 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLC0207-BLK1)						Prepared: 08-Mar-2023 Analyzed: 10-Mar-2023 17:19						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Beryllium, Dissolved	9	ND	0.0171	0.200	ug/L							U
Chromium, Dissolved	52	ND	0.260	0.500	ug/L							U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L							U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L							U
Copper, Dissolved	63	ND	0.173	0.500	ug/L							U
Nickel, Dissolved	60	ND	0.0792	0.500	ug/L							U
Selenium, Dissolved	78	ND	0.179	0.500	ug/L							U
Zinc, Dissolved	66	ND	2.92	6.00	ug/L							U

LCS (BLC0207-BS1)						Prepared: 08-Mar-2023 Analyzed: 10-Mar-2023 17:24						
Antimony, Dissolved	121	24.8	0.101	0.200	ug/L	25.0		99.1	80-120			
Beryllium, Dissolved	9	25.8	0.0171	0.200	ug/L	25.0		103	80-120			
Chromium, Dissolved	52	24.6	0.260	0.500	ug/L	25.0		98.3	80-120			
Lead, Dissolved	208	25.4	0.0513	0.100	ug/L	25.0		101	80-120			
Silver, Dissolved	107	24.8	0.0220	0.200	ug/L	25.0		99.0	80-120			
Thallium, Dissolved	205	25.3	0.0234	0.200	ug/L	25.0		101	80-120			
Arsenic, Dissolved	75a	24.2	0.0373	0.200	ug/L	25.0		96.9	80-120			
Cadmium, Dissolved	111	26.1	0.0300	0.100	ug/L	25.0		104	80-120			
Copper, Dissolved	63	25.0	0.173	0.500	ug/L	25.0		100	80-120			
Nickel, Dissolved	60	24.4	0.0792	0.500	ug/L	25.0		97.5	80-120			
Selenium, Dissolved	78	79.0	0.179	0.500	ug/L	80.0		98.8	80-120			
Zinc, Dissolved	66	80.7	2.92	6.00	ug/L	80.0		101	80-120			

Duplicate (BLC0207-DUP1)						Source: 23B0508-14 Prepared: 08-Mar-2023 Analyzed: 11-Mar-2023 06:02						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L		ND					U
Beryllium, Dissolved	9	ND	0.0171	0.200	ug/L		ND					U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L		ND					U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L		ND					U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L		ND					U
Arsenic, Dissolved	75a	1.82	0.0373	0.200	ug/L	1.75				3.86	20	
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L		ND					U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLC0207 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BLC0207-DUP1)		Source: 23B0508-14				Prepared: 08-Mar-2023		Analyzed: 11-Mar-2023 06:02				
Copper, Dissolved	63	ND	0.173	0.500	ug/L		ND					U
Nickel, Dissolved	60	0.358	0.0792	0.500	ug/L		0.270			28.00	20	L, J
Selenium, Dissolved	78	ND	0.179	0.500	ug/L		ND					U
Zinc, Dissolved	66	ND	2.92	6.00	ug/L		ND					U

Duplicate (BLC0207-DUP2)		Source: 23B0508-14				Prepared: 08-Mar-2023		Analyzed: 14-Mar-2023 01:07				
Chromium, Dissolved	52	ND	0.520	1.00	ug/L		ND					U

Matrix Spike (BLC0207-MS1)		Source: 23B0508-14				Prepared: 08-Mar-2023		Analyzed: 11-Mar-2023 06:07				
Antimony, Dissolved	121	25.8	0.101	0.200	ug/L	25.0	ND	103	75-125			
Beryllium, Dissolved	9	26.0	0.0171	0.200	ug/L	25.0	ND	104	75-125			
Lead, Dissolved	208	26.4	0.0513	0.100	ug/L	25.0	ND	106	75-125			
Silver, Dissolved	107	25.0	0.0220	0.200	ug/L	25.0	ND	100	75-125			
Thallium, Dissolved	205	26.3	0.0234	0.200	ug/L	25.0	ND	105	75-125			
Arsenic, Dissolved	75a	27.0	0.0373	0.200	ug/L	25.0	1.75	101	75-125			
Cadmium, Dissolved	111	26.5	0.0300	0.100	ug/L	25.0	ND	106	75-125			
Copper, Dissolved	63	26.1	0.173	0.500	ug/L	25.0	ND	104	75-125			
Nickel, Dissolved	60	25.7	0.0792	0.500	ug/L	25.0	0.270	102	75-125			
Selenium, Dissolved	78	75.3	0.179	0.500	ug/L	80.0	ND	94.1	75-125			
Zinc, Dissolved	66	78.2	2.92	6.00	ug/L	80.0	ND	97.7	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BLC0207-MS2)		Source: 23B0508-14				Prepared: 08-Mar-2023		Analyzed: 14-Mar-2023 01:12				
Chromium, Dissolved	52	24.2	0.520	1.00	ug/L	25.0	ND	96.8	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLC0207-MSD1)		Source: 23B0508-14				Prepared: 08-Mar-2023		Analyzed: 11-Mar-2023 06:13				
Antimony, Dissolved	121	26.8	0.101	0.200	ug/L	25.0	ND	107	75-125	3.89	20	
Beryllium, Dissolved	9	25.9	0.0171	0.200	ug/L	25.0	ND	104	75-125	0.58	20	
Lead, Dissolved	208	26.5	0.0513	0.100	ug/L	25.0	ND	106	75-125	0.23	20	
Silver, Dissolved	107	25.3	0.0220	0.200	ug/L	25.0	ND	101	75-125	1.29	20	
Thallium, Dissolved	205	26.2	0.0234	0.200	ug/L	25.0	ND	105	75-125	0.18	20	
Arsenic, Dissolved	75a	27.5	0.0373	0.200	ug/L	25.0	1.75	103	75-125	2.02	20	
Cadmium, Dissolved	111	26.5	0.0300	0.100	ug/L	25.0	ND	106	75-125	0.03	20	
Copper, Dissolved	63	26.0	0.173	0.500	ug/L	25.0	ND	104	75-125	0.28	20	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLC0207 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLC0207-MSD1)		Source: 23B0508-14		Prepared: 08-Mar-2023		Analyzed: 11-Mar-2023 06:13						
Nickel, Dissolved	60	26.7	0.0792	0.500	ug/L	25.0	0.270	106	75-125	3.87	20	
Selenium, Dissolved	78	76.0	0.179	0.500	ug/L	80.0	ND	95.0	75-125	0.95	20	
Zinc, Dissolved	66	79.4	2.92	6.00	ug/L	80.0	ND	99.2	75-125	1.57	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLC0207-MSD2)		Source: 23B0508-14		Prepared: 08-Mar-2023		Analyzed: 14-Mar-2023 01:17						
Chromium, Dissolved	52	24.9	0.520	1.00	ug/L	25.0	ND	99.7	75-125	2.93	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Silver-107	WADOE, DoD-ELAP, NELAP
Silver-107	DoD-ELAP, NELAP
Beryllium-9	WADOE, DoD-ELAP, NELAP
Beryllium-9	NELAP, WADOE, DoD-ELAP
Chromium-52	NELAP, WADOE, DoD-ELAP, ADEC
Lead-208	NELAP, WADOE, DoD-ELAP, ADEC
Antimony-121	NELAP, WADOE, DoD-ELAP
Thallium-205	NELAP, WADOE, DoD-ELAP
Thallium-205	WADOE, DoD-ELAP, NELAP
Silver-107	DoD-ELAP, NELAP
Silver-107	WADOE, DoD-ELAP, NELAP
Beryllium-9	NELAP, WADOE, DoD-ELAP
Beryllium-9	WADOE, DoD-ELAP, NELAP
Chromium-52	NELAP, WADOE, DoD-ELAP, ADEC
Lead-208	NELAP, WADOE, DoD-ELAP, ADEC
Antimony-121	NELAP, WADOE, DoD-ELAP
Thallium-205	NELAP, WADOE, DoD-ELAP
Thallium-205	WADOE, DoD-ELAP, NELAP
EPA 6020B UCT-KED in Water	
Arsenic-75a	WADOE, DoD-ELAP, ADEC, NELAP
Arsenic-75a	NELAP, WADOE, DoD-ELAP, ADEC
Cadmium-111	NELAP, WADOE, DoD-ELAP, ADEC
Copper-63	NELAP, WADOE, DoD-ELAP
Nickel-60	NELAP, WADOE, DoD-ELAP, ADEC
Selenium-78	NELAP, WADOE, DoD-ELAP
Zinc-66	WADOE, DoD-ELAP
Zinc-66	NELAP, WADOE, DoD-ELAP
Arsenic-75a	NELAP, WADOE, DoD-ELAP, ADEC
Arsenic-75a	WADOE, DoD-ELAP, ADEC, NELAP
Cadmium-111	NELAP, WADOE, DoD-ELAP, ADEC



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Copper-63	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP
Zinc-66	NELAP,WADOE,DoD-ELAP
Zinc-66	WADOE,DoD-ELAP

EPA 7470A in Water

Mercury	WADOE,NELAP,DoD-ELAP
Mercury	WADOE,NELAP,DoD-ELAP

EPA 8082A in Water

Aroclor 1016	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1016 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 [2C]	WADOE,DoD-ELAP,NELAP,ADEC

EPA 8260D in Water

Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE



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Project Manager: Ali Cochrane

Reported:
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EPA 8270E in Water

Phenol	NELAP,DoD-ELAP
bis(2-chloroethyl) ether	NELAP,DoD-ELAP
2-Chlorophenol	NELAP,DoD-ELAP
1,3-Dichlorobenzene	NELAP,DoD-ELAP
1,4-Dichlorobenzene	NELAP,DoD-ELAP
1,2-Dichlorobenzene	NELAP,DoD-ELAP
Benzyl Alcohol	NELAP,DoD-ELAP
2,2'-Oxybis(1-chloropropane)	NELAP,DoD-ELAP
2-Methylphenol	NELAP,DoD-ELAP
Hexachloroethane	NELAP,DoD-ELAP
N-Nitroso-di-n-Propylamine	NELAP,DoD-ELAP
4-Methylphenol	NELAP,DoD-ELAP
Nitrobenzene	NELAP,DoD-ELAP
Isophorone	NELAP,DoD-ELAP
2-Nitrophenol	NELAP,DoD-ELAP
2,4-Dimethylphenol	NELAP,DoD-ELAP
Bis(2-Chloroethoxy)methane	NELAP,DoD-ELAP
2,4-Dichlorophenol	NELAP,DoD-ELAP
1,2,4-Trichlorobenzene	NELAP,DoD-ELAP
Naphthalene	NELAP,DoD-ELAP
Benzoic acid	NELAP,DoD-ELAP
4-Chloroaniline	NELAP,DoD-ELAP
Hexachlorobutadiene	NELAP,DoD-ELAP
4-Chloro-3-Methylphenol	NELAP,DoD-ELAP
2-Methylnaphthalene	NELAP,DoD-ELAP
Hexachlorocyclopentadiene	NELAP,DoD-ELAP
2,4,6-Trichlorophenol	NELAP,DoD-ELAP
2,4,5-Trichlorophenol	NELAP,DoD-ELAP
2-Chloronaphthalene	NELAP,DoD-ELAP
2-Nitroaniline	NELAP,DoD-ELAP
Acenaphthylene	NELAP,DoD-ELAP
Dimethylphthalate	NELAP,DoD-ELAP



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Project: West Duwamish CSO
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Reported:
29-Mar-2023 20:25

2,6-Dinitrotoluene	NELAP,DoD-ELAP
Acenaphthene	NELAP,DoD-ELAP
3-Nitroaniline	NELAP,DoD-ELAP
2,4-Dinitrophenol	NELAP,DoD-ELAP
Dibenzofuran	NELAP,DoD-ELAP
4-Nitrophenol	NELAP,DoD-ELAP
2,4-Dinitrotoluene	NELAP,DoD-ELAP
Fluorene	NELAP,DoD-ELAP
4-Chlorophenylphenyl ether	NELAP,DoD-ELAP
Diethyl phthalate	NELAP,DoD-ELAP
4-Nitroaniline	NELAP,DoD-ELAP
4,6-Dinitro-2-methylphenol	NELAP,DoD-ELAP
N-Nitrosodiphenylamine	NELAP,DoD-ELAP
4-Bromophenyl phenyl ether	NELAP,DoD-ELAP
Hexachlorobenzene	NELAP,DoD-ELAP
Pentachlorophenol	NELAP,DoD-ELAP
Phenanthrene	NELAP,DoD-ELAP
Anthracene	NELAP,DoD-ELAP
Carbazole	NELAP,DoD-ELAP
Di-n-Butylphthalate	NELAP,DoD-ELAP
Fluoranthene	NELAP,DoD-ELAP
Pyrene	NELAP,DoD-ELAP
Butylbenzylphthalate	NELAP,DoD-ELAP
Benzo(a)anthracene	NELAP,DoD-ELAP
3,3'-Dichlorobenzidine	NELAP,DoD-ELAP
Chrysene	NELAP,DoD-ELAP
bis(2-Ethylhexyl)phthalate	NELAP,DoD-ELAP
Di-n-Octylphthalate	NELAP,DoD-ELAP
Benzo(a)fluoranthenes, Total	NELAP
Benzo(a)pyrene	NELAP,DoD-ELAP
Indeno(1,2,3-cd)pyrene	NELAP,DoD-ELAP
Dibenzo(a,h)anthracene	NELAP,DoD-ELAP
Benzo(g,h,i)perylene	NELAP,DoD-ELAP



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Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

1-Methylnaphthalene NELAP,DoD-ELAP

EPA 8270E-SIM in Water

Naphthalene ADEC,DoD-ELAP,NELAP,WADOE
2-Methylnaphthalene ADEC,DoD-ELAP,NELAP
1-Methylnaphthalene ADEC,DoD-ELAP,NELAP,WADOE
Acenaphthylene ADEC,DoD-ELAP,NELAP,WADOE
Acenaphthene ADEC,DoD-ELAP,NELAP,WADOE
Dibenzofuran ADEC,DoD-ELAP,NELAP
Fluorene ADEC,DoD-ELAP,NELAP,WADOE
Phenanthrene ADEC,DoD-ELAP,NELAP,WADOE
Anthracene ADEC,DoD-ELAP,NELAP,WADOE
Carbazole NELAP
Fluoranthene ADEC,DoD-ELAP,NELAP,WADOE
Pyrene ADEC,DoD-ELAP,NELAP,WADOE
Benzo(a)anthracene ADEC,DoD-ELAP,NELAP,WADOE
Chrysene ADEC,DoD-ELAP,NELAP,WADOE
Benzo(b)fluoranthene ADEC,DoD-ELAP,NELAP,WADOE
Benzo(k)fluoranthene ADEC,DoD-ELAP,NELAP,WADOE
Benzo(j)fluoranthene ADEC,DoD-ELAP,NELAP,WADOE
Benzo(a)pyrene ADEC,DoD-ELAP,NELAP,WADOE
Perylene ADEC,NELAP
Indeno(1,2,3-cd)pyrene ADEC,DoD-ELAP,NELAP,WADOE
Dibenzo(a,h)anthracene ADEC,DoD-ELAP,NELAP,WADOE
Benzo(g,h,i)perylene ADEC,DoD-ELAP,NELAP,WADOE

NWTPH-Dx in Water

Diesel Range Organics (C12-C2 DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24- DoD-ELAP,NELAP,WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-N WADOE,DoD-ELAP



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 29-Mar-2023 20:25
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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:25

Notes and Definitions

- * Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- D1 Surrogate was not detected due to sample extract dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- J Estimated concentration value detected below the reporting limit.
- L Analyte concentration is ≤ 5 times the reporting limit and the replicate control limit defaults to \pm RL instead of 20% RPD
- P1 The reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ($< 20\%$ RSD, $< 20\%$ drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

29 March 2023

Ali Cochrane
Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle, WA 98104

RE: West Duwamish CSO (150218)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
23B0509

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Shelly Fishel, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, LLC
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number: 23B0509	Turn-around Requested: Standard	Page: 1 of 1
ARI Client Company: Aspect Consulting	Phone: 435 714 4531	Date: 2/24/23
Client Contact: a.cochrane@aspectconsulting.com A. Cochrane c.brock@aspectconsulting.com Carla Brock	No. of Coolers:	Ice Present? Cooler Temps:

Client Project Name: West Plains High CSO	Analysis Requested	Notes/Comments									
Client Project #: 150218	<table border="1"> <tr> <td>As/NTPH GX</td> <td>DX</td> <td>Metals EPA 200.7/200.8 2020A</td> <td>Dissolved Metals Field Filtered</td> <td>SVOCs</td> <td>VOCs EPA 4260</td> <td>SEM PAH-LL 8276</td> <td>PCB LL Analytes</td> <td>Congeners</td> </tr> </table>	As/NTPH GX	DX	Metals EPA 200.7/200.8 2020A	Dissolved Metals Field Filtered	SVOCs	VOCs EPA 4260	SEM PAH-LL 8276	PCB LL Analytes	Congeners	
As/NTPH GX	DX	Metals EPA 200.7/200.8 2020A	Dissolved Metals Field Filtered	SVOCs	VOCs EPA 4260	SEM PAH-LL 8276	PCB LL Analytes	Congeners			

Sample ID	Date	Time	Matrix	No. Containers	As/NTPH GX	DX	Metals EPA 200.7/200.8 2020A	Dissolved Metals Field Filtered	SVOCs	VOCs EPA 4260	SEM PAH-LL 8276	PCB LL Analytes	Congeners	Notes/Comments
MW-09-022323	2/23/23	1610	W	1.7	X	X	X	X	X	X	X	X	X	Hold PCB Congeners testing samples
MW-10-022423	2/24/23	1150	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
MW-11-022323	2/23/23	1230	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
MW-Y-232302	02/23/23	0100	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	↓	
Trip Blank-					X					X				

Comments/Special Instructions Level 2 Data validation MS/MSD analysis needed See QAPP for additional details	Relinquished by: (Signature) <i>David Mackay</i>	Received by: (Signature) <i>[Signature]</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: David Mackay	Printed Name: JCS	Printed Name:	Printed Name:
	Company: Aspect	Company: ARI LLC	Company:	Company:
	Date & Time: 2/24/23 1400	Date & Time: 02/24/23 14:00	Date & Time:	Date & Time:

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-09-022323	23B0509-01	Water	23-Feb-2023 16:10	24-Feb-2023 14:00
MW-09-022323	23B0509-02	Water	23-Feb-2023 16:10	24-Feb-2023 14:00
MW-10-022423	23B0509-03	Water	24-Feb-2023 11:50	24-Feb-2023 14:00
MW-10-022423	23B0509-04	Water	22-Feb-2023 11:50	24-Feb-2023 14:00
MW-11-022323	23B0509-05	Water	23-Feb-2023 12:30	24-Feb-2023 14:00
MW-11-022323	23B0509-06	Water	23-Feb-2023 12:30	24-Feb-2023 14:00
MW-Y-022323	23B0509-07	Water	23-Feb-2023 01:00	24-Feb-2023 14:00
MW-Y-022323	23B0509-08	Water	23-Feb-2023 01:00	24-Feb-2023 14:00
Trip Blank	23B0509-09	Water	23-Feb-2023 01:00	24-Feb-2023 14:00



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochran

Reported:
29-Mar-2023 20:47

Work Order Case Narrative

Client: Aspect Consulting, LLC.
Project: West Duwamish CSO
Project Number: 150218
Work Order: 23B0509

Sample receipt

Sample(s) as listed on the preceding page were received 24-Feb-2023 14:00 under ARI work order 23B0509. For details regarding sample receipt, please refer to the Cooler Receipt Form.

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Volatiles - EPA Method SW8260D



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Semivolatiles - EPA Method SW8270E

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except 2,4-Dinitrophenol which was out of control low in the initial calibration verifications and the continuing calibration verification. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except Phenol-d5 which was out of control low in sample 23B0509-05. The deviation has been flagged.

The method blank(s) were clean at the reporting limits except Di-n-Butylphthalate. All samples which contain analyte have been flagged with a "B" qualifier.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits except 4-Chloroaniline which was out of control low. The deviations have been flagged.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270E-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except Benzo(g,h,i)perylene which was out of control low in the initial calibration verification. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except as follows. Dibenzo(a,h)anthracene and Floroanthene was out of control low in sample 23B0509-03. The deviations have been flagged.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries were within control limits except for 4-Chloroaniline which was out of control low. The BS/BSD relative percent difference (RPD) were within control limits. The deviations have been flagged.

Total and Dissolved Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

Total and Dissolved Mercury - EPA Method 7470

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.



WORK ORDER

23B0509

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

Preservation Confirmation

Container ID	Container Type	pH
23B0509-01 A	VOA Vial, Clear, 40 mL, HCL	
23B0509-01 B	VOA Vial, Clear, 40 mL, HCL	
23B0509-01 C	VOA Vial, Clear, 40 mL, HCL	
23B0509-01 D	VOA Vial, Clear, 40 mL, HCL	
23B0509-01 E	VOA Vial, Clear, 40 mL, HCL	
23B0509-01 F	Glass NM, Amber, 500 mL	
23B0509-01 G	Glass NM, Amber, 500 mL	
23B0509-01 H	Glass NM, Amber, 500 mL	
23B0509-01 I	Glass NM, Amber, 500 mL	
23B0509-01 J	Glass NM, Amber, 500 mL	
23B0509-01 K	Glass NM, Amber, 500 mL	
23B0509-01 L	HDPE NM, 500 mL, 1:1 HNO3	6.2 P
23B0509-01 M	Glass NM, Amber, 1000 mL	
23B0509-01 N	Glass NM, Amber, 1000 mL	
23B0509-01 O	Glass NM, Amber, 1000 mL	
23B0509-01 P	Glass NM, Amber, 1000 mL	
23B0509-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	6.2 P
23B0509-03 A	VOA Vial, Clear, 40 mL, HCL	
23B0509-03 B	VOA Vial, Clear, 40 mL, HCL	
23B0509-03 C	VOA Vial, Clear, 40 mL, HCL	
23B0509-03 D	VOA Vial, Clear, 40 mL, HCL	
23B0509-03 E	VOA Vial, Clear, 40 mL, HCL	
23B0509-03 F	Glass NM, Amber, 500 mL	
23B0509-03 G	Glass NM, Amber, 500 mL	
23B0509-03 H	Glass NM, Amber, 500 mL	
23B0509-03 I	Glass NM, Amber, 500 mL	
23B0509-03 J	Glass NM, Amber, 500 mL	
23B0509-03 K	Glass NM, Amber, 500 mL	
23B0509-03 L	HDPE NM, 500 mL, 1:1 HNO3	6.2 P
23B0509-03 M	Glass NM, Amber, 1000 mL	
23B0509-03 N	Glass NM, Amber, 1000 mL	
23B0509-03 O	Glass NM, Amber, 1000 mL	
23B0509-03 P	Glass NM, Amber, 1000 mL	
23B0509-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	6.2 P



WORK ORDER

23B0509

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

23B0509-05 A	VOA Vial, Clear, 40 mL, HCL	
23B0509-05 B	VOA Vial, Clear, 40 mL, HCL	
23B0509-05 C	VOA Vial, Clear, 40 mL, HCL	
23B0509-05 D	VOA Vial, Clear, 40 mL, HCL	
23B0509-05 E	VOA Vial, Clear, 40 mL, HCL	
23B0509-05 F	Glass NM, Amber, 500 mL	
23B0509-05 G	Glass NM, Amber, 500 mL	
23B0509-05 H	Glass NM, Amber, 500 mL	
23B0509-05 I	Glass NM, Amber, 500 mL	
23B0509-05 J	Glass NM, Amber, 500 mL	
23B0509-05 K	Glass NM, Amber, 500 mL	
23B0509-05 L	HDPE NM, 500 mL, 1:1 HNO3	L2 P
23B0509-05 M	Glass NM, Amber, 1000 mL	
23B0509-05 N	Glass NM, Amber, 1000 mL	
23B0509-05 O	Glass NM, Amber, 1000 mL	
23B0509-05 P	Glass NM, Amber, 1000 mL	
23B0509-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 P
23B0509-07 A	VOA Vial, Clear, 40 mL, HCL	
23B0509-07 B	VOA Vial, Clear, 40 mL, HCL	
23B0509-07 C	VOA Vial, Clear, 40 mL, HCL	
23B0509-07 D	VOA Vial, Clear, 40 mL, HCL	
23B0509-07 E	VOA Vial, Clear, 40 mL, HCL	
23B0509-07 F	Glass NM, Amber, 500 mL	
23B0509-07 G	Glass NM, Amber, 500 mL	
23B0509-07 H	Glass NM, Amber, 500 mL	
23B0509-07 I	Glass NM, Amber, 500 mL	
23B0509-07 J	Glass NM, Amber, 500 mL	
23B0509-07 K	Glass NM, Amber, 500 mL	
23B0509-07 L	HDPE NM, 500 mL, 1:1 HNO3	L2 P
23B0509-07 M	Glass NM, Amber, 1000 mL	
23B0509-07 N	Glass NM, Amber, 1000 mL	
23B0509-07 O	Glass NM, Amber, 1000 mL	
23B0509-07 P	Glass NM, Amber, 1000 mL	
23B0509-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 P
23B0509-09 A	VOA Vial, Clear, 40 mL, HCL	

Amber Smith

02/24/23



Cooler Receipt Form

ARI Client: Aspod

Project Name: West Phosmin CSO

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 23B0509

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 9.8 4.6 2.5

Time 13:59 Temp Gun ID#: 10097d

If cooler temperature is out of compliance fill-out form 00070F _____

Cooler Accepted by: [Signature] Date: 02/21/23 Time: 14:00

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA 7.5 YES 02/21/23 NO

How were bottles sealed in plastic bags? Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI..... NA

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: [Signature] Date: 02/21/23 Time: 14:59 Labels checked by: TC

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Cooler Temperature Compliance Form

ARI Work Order: 23B0509

Cooler#: _____ Temperature(°C): 9.8

Sample ID	Bottle Count	Bottle Type
		217 bottles over 6°C

Cooler#: _____ Temperature(°C): _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ Temperature(°C): _____

Sample ID	Bottle Count	Bottle Type

Cooler#: _____ Temperature(°C): _____

Sample ID	Bottle Count	Bottle Type

Completed by: [Signature] Date: 02/29/23 Time: 13:57



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 29-Mar-2023 20:47
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MW-09-022323
23B0509-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/23/2023 16:10
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 14:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0509-01 C
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.40	ug/L	
Ethylbenzene	100-41-4	1	0.05	0.20	0.05	ug/L	J
m,p-Xylene	179601-23-1	1	0.14	0.40	0.28	ug/L	J
o-Xylene	95-47-6	1	0.08	0.20	0.11	ug/L	J
<i>Surrogate: Toluene-d8</i>					80-120 %	96.5 %	
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	96.4 %	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

MW-09-022323
23B0509-01 (Water)

Volatile Organic Compounds

Method: NWTPHg

Sampled: 02/23/2023 16:10

Instrument: NT3 Analyst: PKC

Analyzed: 02/27/2023 14:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLB0668
Prepared: 02/27/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 23B0509-01 C

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	96.4	%	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

MW-09-022323
23B0509-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 16:10

Instrument: NT10 Analyst: VTS

Analyzed: 03/21/2023 04:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLB0678
Prepared: 02/28/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23B0509-01 N 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

MW-09-022323
23B0509-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 16:10

Instrument: NT10 Analyst: VTS

Analyzed: 03/21/2023 04:38

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	0.2	ug/L	J
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U

Surrogate: 2-Fluorophenol

30-160 % 51.0 %

Surrogate: Phenol-d5

30-160 % 31.4 %

Surrogate: 2-Chlorophenol-d4

30-160 % 89.9 %

Surrogate: 1,2-Dichlorobenzene-d4

30-160 % 67.8 %



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 29-Mar-2023 20:47
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MW-09-022323
23B0509-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 02/23/2023 16:10
Instrument: NT10 Analyst: VTS Analyzed: 03/21/2023 04:38

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	84.2	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	80.0	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	95.2	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	80.4	%	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

MW-09-022323
23B0509-01 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 02/23/2023 16:10
Instrument: NT11 Analyst: VTS Analyzed: 03/09/2023 17:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0509-01 I 01
Preparation Batch: BLB0676 Sample Size: 500 mL
Prepared: 03/01/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 23B0509-01 I 01
Cleanup Batch: CLC0063 Initial Volume: 0.5 uL
Cleaned: 07-Mar-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.015	ug/L	
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.002	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.004	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	0.001	ug/L	J
Fluoranthene	206-44-0	1	0.002	0.010	0.002	ug/L	J
Pyrene	129-00-0	1	0.001	0.010	0.002	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	0.001	ug/L	J
Chrysene	218-01-9	1	0.0009	0.010	0.001	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.0008	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 56.8 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 33.5 %
Surrogate: Fluoranthene-d10 57-120 % 64.0 %



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 29-Mar-2023 20:47
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MW-09-022323
23B0509-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 02/23/2023 16:10
Instrument: FID4 Analyst: AA Analyzed: 03/06/2023 16:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0509-01 F 01
Preparation Batch: BLB0675 Sample Size: 500 mL
Prepared: 02/28/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	89.3	%	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

MW-09-022323
23B0509-01 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 02/23/2023 16:10

Instrument: ECD7 Analyst: RJL

Analyzed: 03/10/2023 18:13

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLB0677 Prepared: 03/01/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23B0509-01 M 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLC0056 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0509-01 M 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLC0058 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0509-01 M 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLC0057 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0509-01 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	43.3 %
Surrogate: Tetrachlorometaxylene	32-120 %	43.9 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	42.1 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	41.8 %



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MW-09-022323
23B0509-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/23/2023 16:10
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 07:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-01 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Beryllium	7440-41-7	1	0.0171	0.200	0.0190	ug/L	J
Chromium	7440-47-3	2	0.520	1.00	0.826	ug/L	J, D
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

MW-09-022323
23B0509-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 02/23/2023 16:10

Instrument: ICPMS2 Analyst: MCB

Analyzed: 03/11/2023 07:56

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23B0509-01 L 01

Preparation Batch: BLC0206

Sample Size: 25 mL

Prepared: 03/08/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.31	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.337	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.498	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.270	ug/L	J
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-09-022323
23B0509-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 02/23/2023 16:10
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0509-01 L
Preparation Batch: BLC0112 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-09-022323
23B0509-01RE1 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/23/2023 16:10
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/14/2023 04:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-01RE1 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U



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MW-09-022323
23B0509-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 02/23/2023 16:10
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 07:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-02 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0180	ug/L	J
Chromium, Dissolved	7440-47-3	2	0.520	1.00	0.836	ug/L	J, D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-09-022323
23B0509-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/23/2023 16:10
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 07:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-02 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.20	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.460	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	ND	ug/L	U
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-09-022323
23B0509-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 02/23/2023 16:10
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 14:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0509-02 A
Preparation Batch: BLC0113 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-09-022323
23B0509-02RE1 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 02/23/2023 16:10
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/14/2023 04:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-02RE1 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U



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MW-10-022423
23B0509-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/24/2023 11:50
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 15:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0509-03 A
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.38	ug/L	
Ethylbenzene	100-41-4	1	0.05	0.20	0.07	ug/L	J
m,p-Xylene	179601-23-1	1	0.14	0.40	0.28	ug/L	J
o-Xylene	95-47-6	1	0.08	0.20	0.12	ug/L	J
<i>Surrogate: Toluene-d8</i>					80-120 %	96.7	%
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	96.3	%



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 29-Mar-2023 20:47
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MW-10-022423
23B0509-03 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/24/2023 11:50
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 15:06

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0509-03 A
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	96.7	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	96.3	%	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

MW-10-022423
23B0509-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/24/2023 11:50

Instrument: NT10 Analyst: VTS

Analyzed: 03/21/2023 05:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLB0678
Prepared: 02/28/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23B0509-03 N 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	2.0	ug/L	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

MW-10-022423
23B0509-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/24/2023 11:50

Instrument: NT10 Analyst: VTS

Analyzed: 03/21/2023 05:16

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>50.3 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>30.8 %</i>	
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>91.3 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>65.5 %</i>	



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MW-10-022423
23B0509-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 02/24/2023 11:50
Instrument: NT10 Analyst: VTS Analyzed: 03/21/2023 05:16

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	84.7	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	80.4	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	98.9	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	84.4	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

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MW-10-022423
23B0509-03 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 02/24/2023 11:50
Instrument: NT11 Analyst: VTS Analyzed: 03/09/2023 18:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0509-03 I 01
Preparation Batch: BLB0676 Sample Size: 500 mL
Prepared: 03/01/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 23B0509-03 I 01
Cleanup Batch: CLC0063 Initial Volume: 0.5 uL
Cleaned: 07-Mar-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.016	ug/L	
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.003	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	1.37	ug/L	E
Dibenzofuran	132-64-9	1	0.002	0.010	0.003	ug/L	J
Fluorene	86-73-7	1	0.002	0.010	0.002	ug/L	J
Phenanthrene	85-01-8	1	0.001	0.010	0.005	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	0.002	ug/L	J
Fluoranthene	206-44-0	1	0.002	0.010	0.003	ug/L	J
Pyrene	129-00-0	1	0.001	0.010	0.002	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	0.001	ug/L	J
Chrysene	218-01-9	1	0.0009	0.010	0.001	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.0007	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 51.1 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 28.2 % *

Surrogate: Fluoranthene-d10

57-120 % 55.6 % *



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MW-10-022423
23B0509-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 02/24/2023 11:50
Instrument: FID4 Analyst: AA Analyzed: 03/06/2023 17:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0509-03 F 01
Preparation Batch: BLB0675 Sample Size: 500 mL
Prepared: 02/28/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	96.5	%	



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Project Manager: Ali Cochrane

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MW-10-022423
23B0509-03 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 02/24/2023 11:50
Instrument: ECD7 Analyst: RJL Analyzed: 03/10/2023 18:33

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLB0677 Prepared: 03/01/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23B0509-03 M 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLC0056 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0509-03 M 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLC0058 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0509-03 M 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLC0057 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0509-03 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	39.8 %
Surrogate: Tetrachlorometaxylene	32-120 %	45.7 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	38.7 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	44.2 %



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MW-10-022423
23B0509-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/24/2023 11:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-03 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	2	0.520	1.00	0.974	ug/L	J, D
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-10-022423
23B0509-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 02/24/2023 11:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-03 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.01	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.239	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.434	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.902	ug/L	
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-10-022423
23B0509-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 02/24/2023 11:50
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0509-03 L
Preparation Batch: BLC0112 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-10-022423
23B0509-03RE1 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/24/2023 11:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/14/2023 05:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-03RE1 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U



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MW-10-022423
23B0509-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 02/22/2023 11:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 07:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-04 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	2	0.520	1.00	0.902	ug/L	J, D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-10-022423
23B0509-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/22/2023 11:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 07:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-04 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.952	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.383	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.838	ug/L	
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-10-022423
23B0509-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 02/22/2023 11:50
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 14:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0509-04 A
Preparation Batch: BLC0113 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-10-022423
23B0509-04RE1 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 02/22/2023 11:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/14/2023 05:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-04RE1 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U



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Project Manager: Ali Cochrane

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MW-11-022323
23B0509-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 02/23/2023 12:30

Instrument: NT3 Analyst: PKC

Analyzed: 02/27/2023 15:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLB0668
Prepared: 02/27/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 23B0509-05 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.37	ug/L	
Ethylbenzene	100-41-4	1	0.05	0.20	0.07	ug/L	J
m,p-Xylene	179601-23-1	1	0.14	0.40	0.31	ug/L	J
o-Xylene	95-47-6	1	0.08	0.20	0.12	ug/L	J
<i>Surrogate: Toluene-d8</i>					80-120 %	98.8 %	
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	99.8 %	



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MW-11-022323
23B0509-05 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/23/2023 12:30
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 15:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0509-05 A
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	98.8	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	99.8	%	



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Project: West Duwamish CSO
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Project Manager: Ali Cochrane

Reported:
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MW-11-022323
23B0509-05 (Water)

Semivolatiles Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 12:30

Instrument: NT10 Analyst: VTS

Analyzed: 03/21/2023 05:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLB0678
Prepared: 02/28/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23B0509-05 N 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-11-022323
23B0509-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 12:30

Instrument: NT10 Analyst: VTS

Analyzed: 03/21/2023 05:54

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	0.2	ug/L	J
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	0.3	ug/L	
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>46.9 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>28.8 %</i>	*
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>84.3 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>64.5 %</i>	



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MW-11-022323
23B0509-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 02/23/2023 12:30
Instrument: NT10 Analyst: VTS Analyzed: 03/21/2023 05:54

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	81.4	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	74.6	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	94.6	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	79.1	%	



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-11-022323
23B0509-05 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 02/23/2023 12:30
Instrument: NT11 Analyst: VTS Analyzed: 03/09/2023 19:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0509-05 1 01
Preparation Batch: BLB0676 Sample Size: 500 mL
Prepared: 03/01/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 23B0509-05 1 01
Cleanup Batch: CLC0063 Initial Volume: 0.5 uL
Cleaned: 07-Mar-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.017	ug/L	
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.004	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.003	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	0.007	ug/L	J
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.003	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	0.002	ug/L	J
Fluoranthene	206-44-0	1	0.002	0.010	0.002	ug/L	J
Pyrene	129-00-0	1	0.001	0.010	0.002	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.0009	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.0006	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10 42-120 % 56.6 %
Surrogate: Dibenzo[a,h]anthracene-d14 29-120 % 31.3 %
Surrogate: Fluoranthene-d10 57-120 % 63.4 %



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MW-11-022323
23B0509-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 02/23/2023 12:30
Instrument: FID4 Analyst: AA Analyzed: 03/06/2023 18:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0509-05 F 01
Preparation Batch: BLB0675 Sample Size: 500 mL
Prepared: 02/28/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	91.5	%	



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Project Number: 150218
Project Manager: Ali Cochrane

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MW-11-022323
23B0509-05 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 02/23/2023 12:30
Instrument: ECD7 Analyst: RJL Analyzed: 03/10/2023 18:54

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLB0677 Prepared: 03/01/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23B0509-05 M 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLC0056 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0509-05 M 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLC0058 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0509-05 M 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLC0057 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0509-05 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	35.9	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	36.4	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	35.8	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	34.1	%



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MW-11-022323
23B0509-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/23/2023 12:30
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-05 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Beryllium	7440-41-7	1	0.0171	0.200	0.0230	ug/L	J
Chromium	7440-47-3	2	0.520	1.00	1.26	ug/L	D
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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Project Manager: Ali Cochrane

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MW-11-022323
23B0509-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 02/23/2023 12:30

Instrument: ICPMS2 Analyst: MCB

Analyzed: 03/11/2023 08:05

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23B0509-05 L 01

Preparation Batch: BLC0206

Sample Size: 25 mL

Prepared: 03/08/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.636	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.268	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.231	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.669	ug/L	
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-11-022323
23B0509-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 02/23/2023 12:30
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0509-05 L
Preparation Batch: BLC0112 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-11-022323
23B0509-05RE1 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/23/2023 12:30
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/14/2023 04:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-05RE1 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U



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MW-11-022323
23B0509-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 02/23/2023 12:30
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 07:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-06 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0260	ug/L	J
Chromium, Dissolved	7440-47-3	2	0.520	1.00	1.12	ug/L	D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-11-022323
23B0509-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/23/2023 12:30
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 07:46

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-06 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.659	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.247	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.787	ug/L	
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-11-022323
23B0509-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 02/23/2023 12:30
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 14:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0509-06 A
Preparation Batch: BLC0113 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-11-022323
23B0509-06RE1 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B

Sampled: 02/23/2023 12:30

Instrument: ICPMS2 Analyst: MCB

Analyzed: 03/14/2023 05:05

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23B0509-06RE1 A 01

Preparation Batch: BLC0207

Sample Size: 25 mL

Prepared: 03/08/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U



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MW-Y-022323
23B0509-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 02/23/2023 01:00

Instrument: NT3 Analyst: PKC

Analyzed: 02/27/2023 15:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLB0668
Prepared: 02/27/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 23B0509-07 A

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	0.37	ug/L	
Ethylbenzene	100-41-4	1	0.05	0.20	0.07	ug/L	J
m,p-Xylene	179601-23-1	1	0.14	0.40	0.29	ug/L	J
o-Xylene	95-47-6	1	0.08	0.20	0.12	ug/L	J
<i>Surrogate: Toluene-d8</i>					80-120 %	101 %	
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	99.9 %	



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MW-Y-022323
23B0509-07 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/23/2023 01:00
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 15:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0509-07 A
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	99.9	%	



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MW-Y-022323
23B0509-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 01:00

Instrument: NT10 Analyst: VTS

Analyzed: 03/21/2023 06:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLB0678
Prepared: 02/28/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23B0509-07 N 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-Y-022323
23B0509-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 02/23/2023 01:00

Instrument: NT10 Analyst: VTS

Analyzed: 03/21/2023 06:33

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					<i>30-160 %</i>	<i>50.3 %</i>	
<i>Surrogate: Phenol-d5</i>					<i>30-160 %</i>	<i>31.4 %</i>	
<i>Surrogate: 2-Chlorophenol-d4</i>					<i>30-160 %</i>	<i>86.5 %</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					<i>30-160 %</i>	<i>73.2 %</i>	



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MW-Y-022323
23B0509-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 02/23/2023 01:00
Instrument: NT10 Analyst: VTS Analyzed: 03/21/2023 06:33

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	88.6	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	83.0	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	104	%	
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	88.4	%	



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MW-Y-022323
23B0509-07 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM Sampled: 02/23/2023 01:00
Instrument: NT11 Analyst: VTS Analyzed: 03/09/2023 19:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0509-07 I 01
Preparation Batch: BLB0676 Sample Size: 500 mL
Prepared: 03/01/2023 Final Volume: 0.5 mL

Sample Cleanup: Cleanup Method: Silica Gel Extract ID: 23B0509-07 I 01
Cleanup Batch: CLC0063 Initial Volume: 0.5 uL
Cleaned: 07-Mar-2023 Final Volume: 0.5 uL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.001	0.010	0.019	ug/L	
2-Methylnaphthalene	91-57-6	1	0.001	0.010	0.005	ug/L	J
1-Methylnaphthalene	90-12-0	1	0.0009	0.010	0.003	ug/L	J
Acenaphthylene	208-96-8	1	0.002	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.003	0.010	0.006	ug/L	J
Dibenzofuran	132-64-9	1	0.002	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.002	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.001	0.010	0.004	ug/L	J
Anthracene	120-12-7	1	0.001	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.001	0.010	0.002	ug/L	J
Fluoranthene	206-44-0	1	0.002	0.010	0.002	ug/L	J
Pyrene	129-00-0	1	0.001	0.010	0.002	ug/L	J
Benzo(a)anthracene	56-55-3	1	0.0008	0.010	0.001	ug/L	J
Chrysene	218-01-9	1	0.0009	0.010	0.002	ug/L	J
Benzo(b)fluoranthene	205-99-2	1	0.0005	0.010	0.001	ug/L	J
Benzo(k)fluoranthene	207-08-9	1	0.003	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.002	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.004	0.010	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.002	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.006	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.001	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.001	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.001	0.010	ND	ug/L	U
<i>Surrogate: 2-Methylnaphthalene-d10</i>					42-120 %	56.9	%
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>					29-120 %	33.2	%
<i>Surrogate: Fluoranthene-d10</i>					57-120 %	63.8	%



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MW-Y-022323
23B0509-07 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 02/23/2023 01:00
Instrument: FID4 Analyst: AA Analyzed: 03/06/2023 18:31

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23B0509-07 F 01
Preparation Batch: BLB0675 Sample Size: 500 mL
Prepared: 02/28/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	96.1	%	



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MW-Y-022323
23B0509-07 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 02/23/2023 01:00

Instrument: ECD7 Analyst: RJL

Analyzed: 03/10/2023 19:15

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLB0677 Prepared: 03/01/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23B0509-07 M 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLC0056 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0509-07 M 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLC0058 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0509-07 M 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLC0057 Cleaned: 06-Mar-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23B0509-07 M 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	42.3 %
Surrogate: Tetrachlorometaxylene	32-120 %	47.3 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	41.1 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	44.8 %



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MW-Y-022323
23B0509-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/23/2023 01:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-07 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Beryllium	7440-41-7	1	0.0171	0.200	0.0290	ug/L	J
Chromium	7440-47-3	2	0.520	1.00	1.14	ug/L	D
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-Y-022323
23B0509-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 02/23/2023 01:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 08:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-07 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	0.657	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.278	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.238	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.884	ug/L	
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-Y-022323
23B0509-07 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 02/23/2023 01:00
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 13:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0509-07 L
Preparation Batch: BLC0112 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-Y-022323
23B0509-07RE1 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/23/2023 01:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/14/2023 05:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-07RE1 L 01
Preparation Batch: BLC0206 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U



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MW-Y-022323
23B0509-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B

Sampled: 02/23/2023 01:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 03/11/2023 07:51

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23B0509-08 A 01

Preparation Batch: BLC0207

Sample Size: 25 mL

Prepared: 03/08/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0220	ug/L	J
Chromium, Dissolved	7440-47-3	2	0.520	1.00	1.03	ug/L	D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-Y-022323
23B0509-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/23/2023 01:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/11/2023 07:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-08 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	0.683	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.457	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.212	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.728	ug/L	
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-Y-022323
23B0509-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 02/23/2023 01:00
Instrument: HYDRA Analyst: ML Analyzed: 03/07/2023 14:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23B0509-08 A
Preparation Batch: BLC0113 Sample Size: 20 mL
Prepared: 03/06/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-Y-022323
23B0509-08RE1 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 02/23/2023 01:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 03/14/2023 05:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0509-08RE1 A 01
Preparation Batch: BLC0207 Sample Size: 25 mL
Prepared: 03/08/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U



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Trip Blank
23B0509-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 02/23/2023 01:00

Instrument: NT3 Analyst: PKC

Analyzed: 02/27/2023 11:25

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23B0509-09 A

Preparation Batch: BLB0668

Sample Size: 10 mL

Prepared: 02/27/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>					80-120 %	97.5	%
<i>Surrogate: 4-Bromofluorobenzene</i>					80-120 %	96.1	%



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Trip Blank
23B0509-09 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 02/23/2023 01:00
Instrument: NT3 Analyst: PKC Analyzed: 02/27/2023 11:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0509-09 A
Preparation Batch: BLB0668 Sample Size: 10 mL
Prepared: 02/27/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	97.5	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	96.1	%	



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Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLB0668 - NWTPhg

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0668-BLK1)										
					Prepared: 27-Feb-2023		Analyzed: 27-Feb-2023 10:40			
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.92		ug/L	5.00		98.5	80-120			
Surrogate: 4-Bromofluorobenzene	4.86		ug/L	5.00		97.3	80-120			
Blank (BLB0668-BLK2)										
					Prepared: 27-Feb-2023		Analyzed: 27-Feb-2023 10:40			
Benzene	ND	0.05	0.20	ug/L						U
Toluene	ND	0.05	0.20	ug/L						U
Ethylbenzene	ND	0.05	0.20	ug/L						U
m,p-Xylene	ND	0.14	0.40	ug/L						U
o-Xylene	ND	0.08	0.20	ug/L						U
Surrogate: Toluene-d8	4.92		ug/L	5.00		98.5	80-120			
Surrogate: 4-Bromofluorobenzene	4.86		ug/L	5.00		97.3	80-120			
LCS (BLB0668-BS1)										
					Prepared: 27-Feb-2023		Analyzed: 27-Feb-2023 08:48			
Gasoline Range Organics (Tol-Nap)	1060	100	ug/L	1000		106	72-128			
Surrogate: Toluene-d8	4.94		ug/L	5.00		98.7	80-120			
Surrogate: 4-Bromofluorobenzene	5.00		ug/L	5.00		100	80-120			
LCS (BLB0668-BS2)										
					Prepared: 27-Feb-2023		Analyzed: 27-Feb-2023 09:10			
Benzene	10.5	0.05	0.20	ug/L	10.0	105	80-120			
Toluene	10.3	0.05	0.20	ug/L	10.0	103	80-120			
Ethylbenzene	10.6	0.05	0.20	ug/L	10.0	106	80-120			
m,p-Xylene	21.9	0.14	0.40	ug/L	20.0	110	80-121			
o-Xylene	10.7	0.08	0.20	ug/L	10.0	107	80-121			
Surrogate: Toluene-d8	4.98		ug/L	5.00		99.6	80-120			
Surrogate: 4-Bromofluorobenzene	5.06		ug/L	5.00		101	80-120			
LCS Dup (BLB0668-BSD1)										
					Prepared: 27-Feb-2023		Analyzed: 27-Feb-2023 09:32			
Gasoline Range Organics (Tol-Nap)	878	100	ug/L	1000		87.8	72-128	18.30	30	
Surrogate: Toluene-d8	5.01		ug/L	5.00		100	80-120			
Surrogate: 4-Bromofluorobenzene	5.03		ug/L	5.00		101	80-120			
LCS Dup (BLB0668-BSD2)										
					Prepared: 27-Feb-2023		Analyzed: 27-Feb-2023 09:54			
Benzene	10.1	0.05	0.20	ug/L	10.0	101	80-120	4.26	30	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLB0668 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLB0668-BSD2)						Prepared: 27-Feb-2023 Analyzed: 27-Feb-2023 09:54					
Toluene	9.99	0.05	0.20	ug/L	10.0		99.9	80-120	3.12	30	
Ethylbenzene	9.66	0.05	0.20	ug/L	10.0		96.6	80-120	9.14	30	
m,p-Xylene	20.0	0.14	0.40	ug/L	20.0		99.8	80-121	9.34	30	
o-Xylene	9.86	0.08	0.20	ug/L	10.0		98.6	80-121	7.97	30	
Surrogate: Toluene-d8	5.15			ug/L	5.00		103	80-120			
Surrogate: 4-Bromofluorobenzene	5.13			ug/L	5.00		103	80-120			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0678-BLK1)											
						Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 17:02					
Phenol	ND	0.01	0.2	ug/L							U
bis(2-chloroethyl) ether	ND	0.03	0.2	ug/L							U
2-Chlorophenol	ND	0.03	0.2	ug/L							U
1,3-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,4-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,2-Dichlorobenzene	ND	0.03	0.2	ug/L							U
Benzyl Alcohol	ND	0.02	0.2	ug/L							U
2,2'-Oxybis(1-chloropropane)	ND	0.03	0.2	ug/L							U
2-Methylphenol	ND	0.03	0.2	ug/L							U
Hexachloroethane	ND	0.04	0.2	ug/L							U
N-Nitroso-di-n-Propylamine	ND	0.04	0.2	ug/L							U
4-Methylphenol	ND	0.03	0.2	ug/L							U
Nitrobenzene	ND	0.03	0.2	ug/L							U
Isophorone	ND	0.03	0.2	ug/L							U
2-Nitrophenol	ND	0.04	1.0	ug/L							U
2,4-Dimethylphenol	ND	0.3	1.0	ug/L							U
Bis(2-Chloroethoxy)methane	ND	0.03	0.2	ug/L							U
2,4-Dichlorophenol	ND	0.1	1.0	ug/L							U
1,2,4-Trichlorobenzene	ND	0.03	0.2	ug/L							U
Naphthalene	ND	0.03	0.2	ug/L							U
Benzoic acid	ND	0.1	2.0	ug/L							U
4-Chloroaniline	ND	0.04	1.0	ug/L							U
Hexachlorobutadiene	ND	0.04	0.2	ug/L							U
4-Chloro-3-Methylphenol	ND	0.1	1.0	ug/L							U
2-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Hexachlorocyclopentadiene	ND	0.1	1.0	ug/L							U
2,4,6-Trichlorophenol	ND	0.2	1.0	ug/L							U
2,4,5-Trichlorophenol	ND	0.1	1.0	ug/L							U
2-Chloronaphthalene	ND	0.03	0.2	ug/L							U
2-Nitroaniline	ND	0.2	1.0	ug/L							U
Acenaphthylene	ND	0.02	0.2	ug/L							U
Dimethylphthalate	ND	0.04	0.2	ug/L							U
2,6-Dinitrotoluene	ND	0.2	1.0	ug/L							U
Acenaphthene	ND	0.03	0.2	ug/L							U
3-Nitroaniline	ND	0.2	1.0	ug/L							U



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Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0678-BLK1)											
						Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 17:02					
2,4-Dinitrophenol	ND	0.2	2.0	ug/L							U
Dibenzofuran	ND	0.02	0.2	ug/L							U
4-Nitrophenol	ND	0.06	1.0	ug/L							U
2,4-Dinitrotoluene	ND	0.1	1.0	ug/L							U
Fluorene	ND	0.02	0.2	ug/L							U
4-Chlorophenylphenyl ether	ND	0.02	0.2	ug/L							U
Diethyl phthalate	0.1	0.06	0.2	ug/L							J
4-Nitroaniline	ND	0.2	1.0	ug/L							U
4,6-Dinitro-2-methylphenol	ND	0.4	2.0	ug/L							U
N-Nitrosodiphenylamine	ND	0.03	0.2	ug/L							U
4-Bromophenyl phenyl ether	ND	0.02	0.2	ug/L							U
Hexachlorobenzene	ND	0.04	0.2	ug/L							U
Pentachlorophenol	ND	0.1	1.0	ug/L							U
Phenanthrene	ND	0.02	0.2	ug/L							U
Anthracene	ND	0.03	0.2	ug/L							U
Carbazole	ND	0.04	0.2	ug/L							U
Di-n-Butylphthalate	0.3	0.05	0.2	ug/L							
Fluoranthene	ND	0.03	0.2	ug/L							U
Pyrene	ND	0.03	0.2	ug/L							U
Butylbenzylphthalate	ND	0.07	0.2	ug/L							U
Benzo(a)anthracene	ND	0.04	0.2	ug/L							U
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L							U
Chrysene	ND	0.04	0.2	ug/L							U
bis(2-Ethylhexyl)phthalate	ND	0.2	0.2	ug/L							U
Di-n-Octylphthalate	ND	0.05	0.2	ug/L							U
Benzo(a)fluoranthene, Total	ND	0.08	0.4	ug/L							U
Benzo(a)pyrene	ND	0.05	0.2	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.06	0.2	ug/L							U
Dibenzo(a,h)anthracene	ND	0.07	0.2	ug/L							U
Benzo(g,h,i)perylene	ND	0.04	0.2	ug/L							U
1-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Surrogate: 2-Fluorophenol	4.23			ug/L	7.50		56.4	30-160			
Surrogate: Phenol-d5	2.79			ug/L	7.50		37.2	30-160			
Surrogate: 2-Chlorophenol-d4	7.13			ug/L	7.50		95.0	30-160			



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Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0678-BLK1)					Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 17:02						
Surrogate: 1,2-Dichlorobenzene-d4	4.01			ug/L	5.00		80.3	30-160			
Surrogate: Nitrobenzene-d5	4.50			ug/L	5.00		89.9	30-160			
Surrogate: 2-Fluorobiphenyl	4.29			ug/L	5.00		85.8	30-160			
Surrogate: 2,4,6-Tribromophenol	6.86			ug/L	7.50		91.5	30-160			
Surrogate: p-Terphenyl-d14	4.13			ug/L	5.00		82.5	30-160			
Blank (BLB0678-BLK2)					Prepared: 28-Feb-2023 Analyzed: 21-Mar-2023 03:22						
Phenol	ND	0.01	0.2	ug/L							U
bis(2-chloroethyl) ether	ND	0.03	0.2	ug/L							U
2-Chlorophenol	ND	0.03	0.2	ug/L							U
1,3-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,4-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,2-Dichlorobenzene	ND	0.03	0.2	ug/L							U
Benzyl Alcohol	ND	0.02	0.2	ug/L							U
2,2'-Oxybis(1-chloropropane)	ND	0.03	0.2	ug/L							U
2-Methylphenol	ND	0.03	0.2	ug/L							U
Hexachloroethane	ND	0.04	0.2	ug/L							U
N-Nitroso-di-n-Propylamine	ND	0.04	0.2	ug/L							U
4-Methylphenol	ND	0.03	0.2	ug/L							U
Nitrobenzene	ND	0.03	0.2	ug/L							U
Isophorone	ND	0.03	0.2	ug/L							U
2-Nitrophenol	ND	0.04	1.0	ug/L							U
2,4-Dimethylphenol	ND	0.3	1.0	ug/L							U
Bis(2-Chloroethoxy)methane	ND	0.03	0.2	ug/L							U
2,4-Dichlorophenol	ND	0.1	1.0	ug/L							U
1,2,4-Trichlorobenzene	ND	0.03	0.2	ug/L							U
Naphthalene	ND	0.03	0.2	ug/L							U
Benzoic acid	ND	0.1	2.0	ug/L							U
4-Chloroaniline	ND	0.04	1.0	ug/L							U
Hexachlorobutadiene	ND	0.04	0.2	ug/L							U
4-Chloro-3-Methylphenol	ND	0.1	1.0	ug/L							U
2-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Hexachlorocyclopentadiene	ND	0.1	1.0	ug/L							U
2,4,6-Trichlorophenol	ND	0.2	1.0	ug/L							U
2,4,5-Trichlorophenol	ND	0.1	1.0	ug/L							U



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Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0678-BLK2)						Prepared: 28-Feb-2023 Analyzed: 21-Mar-2023 03:22					
2-Chloronaphthalene	ND	0.03	0.2	ug/L							U
2-Nitroaniline	ND	0.2	1.0	ug/L							U
Acenaphthylene	ND	0.02	0.2	ug/L							U
Dimethylphthalate	ND	0.04	0.2	ug/L							U
2,6-Dinitrotoluene	ND	0.2	1.0	ug/L							U
Acenaphthene	ND	0.03	0.2	ug/L							U
3-Nitroaniline	ND	0.2	1.0	ug/L							U
2,4-Dinitrophenol	ND	0.2	2.0	ug/L							U
Dibenzofuran	ND	0.02	0.2	ug/L							U
4-Nitrophenol	ND	0.06	1.0	ug/L							U
2,4-Dinitrotoluene	ND	0.1	1.0	ug/L							U
Fluorene	ND	0.02	0.2	ug/L							U
4-Chlorophenylphenyl ether	ND	0.02	0.2	ug/L							U
Diethyl phthalate	0.1	0.06	0.2	ug/L							J
4-Nitroaniline	ND	0.2	1.0	ug/L							U
4,6-Dinitro-2-methylphenol	ND	0.4	2.0	ug/L							U
N-Nitrosodiphenylamine	ND	0.03	0.2	ug/L							U
4-Bromophenyl phenyl ether	ND	0.02	0.2	ug/L							U
Hexachlorobenzene	ND	0.04	0.2	ug/L							U
Pentachlorophenol	ND	0.1	1.0	ug/L							U
Phenanthrene	ND	0.02	0.2	ug/L							U
Anthracene	ND	0.03	0.2	ug/L							U
Carbazole	ND	0.04	0.2	ug/L							U
Di-n-Butylphthalate	0.3	0.05	0.2	ug/L							
Fluoranthene	ND	0.03	0.2	ug/L							U
Pyrene	ND	0.03	0.2	ug/L							U
Butylbenzylphthalate	ND	0.07	0.2	ug/L							U
Benzo(a)anthracene	ND	0.04	0.2	ug/L							U
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L							U
Chrysene	ND	0.04	0.2	ug/L							U
bis(2-Ethylhexyl)phthalate	ND	0.2	0.2	ug/L							U
Di-n-Octylphthalate	ND	0.05	0.2	ug/L							U
Benzo(a)fluoranthene, Total	ND	0.08	0.4	ug/L							U
Benzo(a)pyrene	ND	0.05	0.2	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.06	0.2	ug/L							U



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Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0678-BLK2)											
						Prepared: 28-Feb-2023	Analyzed: 21-Mar-2023 03:22				
Dibenzo(a,h)anthracene	ND	0.07	0.2	ug/L							U
Benzo(g,h,i)perylene	ND	0.04	0.2	ug/L							U
1-Methylnaphthalene	ND	0.03	0.2	ug/L							U
<i>Surrogate: 2-Fluorophenol</i>	4.32			ug/L	7.50		57.6	30-160			
<i>Surrogate: Phenol-d5</i>	2.79			ug/L	7.50		37.2	30-160			
<i>Surrogate: 2-Chlorophenol-d4</i>	6.64			ug/L	7.50		88.5	30-160			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	4.10			ug/L	5.00		82.1	30-160			
<i>Surrogate: Nitrobenzene-d5</i>	4.42			ug/L	5.00		88.3	30-160			
<i>Surrogate: 2-Fluorobiphenyl</i>	4.29			ug/L	5.00		85.7	30-160			
<i>Surrogate: 2,4,6-Tribromophenol</i>	6.74			ug/L	7.50		89.9	30-160			
<i>Surrogate: p-Terphenyl-d14</i>	4.11			ug/L	5.00		82.3	30-160			
LCS (BLB0678-BS1)											
						Prepared: 28-Feb-2023	Analyzed: 20-Mar-2023 17:41				
Phenol	1.7	0.01	0.2	ug/L	5.00		34.2	30-160			
bis(2-chloroethyl) ether	4.1	0.03	0.2	ug/L	5.00		82.5	30-160			
2-Chlorophenol	4.0	0.03	0.2	ug/L	5.00		80.3	30-160			
1,3-Dichlorobenzene	3.4	0.03	0.2	ug/L	5.00		67.7	30-160			
1,4-Dichlorobenzene	3.9	0.03	0.2	ug/L	5.00		78.2	30-160			
1,2-Dichlorobenzene	3.6	0.03	0.2	ug/L	5.00		71.6	30-160			
Benzyl Alcohol	2.9	0.02	0.2	ug/L	5.00		57.1	30-160			
2,2'-Oxybis(1-chloropropane)	4.4	0.03	0.2	ug/L	5.00		87.2	30-160			
2-Methylphenol	3.2	0.03	0.2	ug/L	5.00		64.1	30-160			
Hexachloroethane	3.1	0.04	0.2	ug/L	5.00		61.0	30-160			
N-Nitroso-di-n-Propylamine	4.0	0.04	0.2	ug/L	5.00		79.5	30-160			
4-Methylphenol	3.2	0.03	0.2	ug/L	5.00		63.7	30-160			
Nitrobenzene	3.8	0.03	0.2	ug/L	5.00		76.9	30-160			
Isophorone	5.6	0.03	0.2	ug/L	5.00		112	30-160			
2-Nitrophenol	4.0	0.04	1.0	ug/L	5.00		79.1	30-160			
2,4-Dimethylphenol	9.5	0.3	1.0	ug/L	13.0		73.4	30-160			
Bis(2-Chloroethoxy)methane	4.7	0.03	0.2	ug/L	5.00		93.3	30-160			
2,4-Dichlorophenol	14.5	0.1	1.0	ug/L	13.0		112	30-160			
1,2,4-Trichlorobenzene	3.5	0.03	0.2	ug/L	5.00		70.4	30-160			
Naphthalene	3.8	0.03	0.2	ug/L	5.00		76.1	30-160			
Benzoic acid	11.8	0.1	2.0	ug/L	23.0		51.4	30-160			
4-Chloroaniline	2.6	0.04	1.0	ug/L	13.0		19.8	30-160			*



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Project: West Duwamish CSO
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Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLB0678-BS1)						Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 17:41					
Hexachlorobutadiene	3.3	0.04	0.2	ug/L	5.00		65.1	30-160			
4-Chloro-3-Methylphenol	12.6	0.1	1.0	ug/L	13.0		96.8	30-160			
2-Methylnaphthalene	3.8	0.03	0.2	ug/L	5.00		75.5	30-160			
Hexachlorocyclopentadiene	6.4	0.1	1.0	ug/L	13.0		49.4	30-160			
2,4,6-Trichlorophenol	12.6	0.2	1.0	ug/L	13.0		97.1	30-160			
2,4,5-Trichlorophenol	12.1	0.1	1.0	ug/L	13.0		92.9	30-160			
2-Chloronaphthalene	3.7	0.03	0.2	ug/L	5.00		74.3	30-160			
2-Nitroaniline	10.9	0.2	1.0	ug/L	13.0		83.9	30-160			
Acenaphthylene	3.8	0.02	0.2	ug/L	5.00		76.1	30-160			
Dimethylphthalate	4.3	0.04	0.2	ug/L	5.00		86.6	30-160			
2,6-Dinitrotoluene	13.0	0.2	1.0	ug/L	13.0		100	30-160			
Acenaphthene	3.9	0.03	0.2	ug/L	5.00		77.4	30-160			
3-Nitroaniline	10.9	0.2	1.0	ug/L	13.0		84.1	30-160			
2,4-Dinitrophenol	19.8	0.2	2.0	ug/L	23.0		86.2	30-160			Q
Dibenzofuran	3.9	0.02	0.2	ug/L	5.00		78.1	30-160			
4-Nitrophenol	4.3	0.06	1.0	ug/L	13.0		33.0	30-160			
2,4-Dinitrotoluene	12.0	0.1	1.0	ug/L	13.0		92.0	30-160			
Fluorene	4.0	0.02	0.2	ug/L	5.00		79.1	30-160			
4-Chlorophenylphenyl ether	4.2	0.02	0.2	ug/L	5.00		84.3	30-160			
Diethyl phthalate	5.2	0.06	0.2	ug/L	5.00		105	30-160			
4-Nitroaniline	11.6	0.2	1.0	ug/L	13.0		89.5	30-160			
4,6-Dinitro-2-methylphenol	23.8	0.4	2.0	ug/L	23.0		103	30-160			
N-Nitrosodiphenylamine	4.0	0.03	0.2	ug/L	5.00		80.0	30-160			
4-Bromophenyl phenyl ether	4.4	0.02	0.2	ug/L	5.00		88.4	30-160			
Hexachlorobenzene	4.0	0.04	0.2	ug/L	5.00		80.9	30-160			
Pentachlorophenol	12.9	0.1	1.0	ug/L	13.0		99.3	30-160			
Phenanthrene	3.9	0.02	0.2	ug/L	5.00		78.0	30-160			
Anthracene	3.6	0.03	0.2	ug/L	5.00		71.7	30-160			
Carbazole	4.1	0.04	0.2	ug/L	5.00		82.9	30-160			
Di-n-Butylphthalate	4.5	0.05	0.2	ug/L	5.00		90.0	30-160			B
Fluoranthene	3.6	0.03	0.2	ug/L	5.00		71.5	30-160			
Pyrene	3.9	0.03	0.2	ug/L	5.00		77.9	30-160			
Butylbenzylphthalate	4.2	0.07	0.2	ug/L	5.00		84.5	30-160			
Benzo(a)anthracene	4.0	0.04	0.2	ug/L	5.00		79.4	30-160			
3,3'-Dichlorobenzidine	8.8	0.3	1.0	ug/L	13.0		67.8	30-160			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLB0678-BS1)											
						Prepared: 28-Feb-2023	Analyzed: 20-Mar-2023 17:41				
Chrysene	3.8	0.04	0.2	ug/L	5.00		76.2	30-160			
bis(2-Ethylhexyl)phthalate	3.9	0.2	0.2	ug/L	5.00		77.2	30-160			
Di-n-Octylphthalate	4.2	0.05	0.2	ug/L	5.00		83.6	30-160			
Benzo(a)anthracene, Total	8.1	0.08	0.4	ug/L	10.0		81.3	30-160			
Benzo(a)pyrene	4.1	0.05	0.2	ug/L	5.00		81.2	30-160			
Indeno(1,2,3-cd)pyrene	3.7	0.06	0.2	ug/L	5.00		74.5	30-160			
Dibenzo(a,h)anthracene	3.7	0.07	0.2	ug/L	5.00		74.6	30-160			
Benzo(g,h,i)perylene	3.8	0.04	0.2	ug/L	5.00		75.6	30-160			
1-Methylnaphthalene	4.0	0.03	0.2	ug/L	5.00		80.2	30-160			
<i>Surrogate: 2-Fluorophenol</i>	4.25			ug/L	7.50		56.7	30-160			
<i>Surrogate: Phenol-d5</i>	2.85			ug/L	7.50		38.0	30-160			
<i>Surrogate: 2-Chlorophenol-d4</i>	6.34			ug/L	7.50		84.5	30-160			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	3.71			ug/L	5.00		74.2	30-160			
<i>Surrogate: Nitrobenzene-d5</i>	4.13			ug/L	5.00		82.6	30-160			
<i>Surrogate: 2-Fluorobiphenyl</i>	3.96			ug/L	5.00		79.3	30-160			
<i>Surrogate: 2,4,6-Tribromophenol</i>	7.49			ug/L	7.50		99.9	30-160			
<i>Surrogate: p-Terphenyl-d14</i>	3.97			ug/L	5.00		79.5	30-160			
LCS Dup (BLB0678-BSD1)											
						Prepared: 28-Feb-2023	Analyzed: 20-Mar-2023 18:20				
Phenol	2.0	0.01	0.2	ug/L	5.00		39.5	30-160	14.40	30	
bis(2-chloroethyl) ether	4.9	0.03	0.2	ug/L	5.00		97.7	30-160	16.80	30	
2-Chlorophenol	4.7	0.03	0.2	ug/L	5.00		93.4	30-160	15.00	30	
1,3-Dichlorobenzene	4.0	0.03	0.2	ug/L	5.00		79.7	30-160	16.20	30	
1,4-Dichlorobenzene	4.7	0.03	0.2	ug/L	5.00		93.4	30-160	17.70	30	
1,2-Dichlorobenzene	4.2	0.03	0.2	ug/L	5.00		84.6	30-160	16.60	30	
Benzyl Alcohol	3.3	0.02	0.2	ug/L	5.00		66.9	30-160	15.80	30	
2,2'-Oxybis(1-chloropropane)	5.2	0.03	0.2	ug/L	5.00		104	30-160	18.00	30	
2-Methylphenol	3.8	0.03	0.2	ug/L	5.00		75.2	30-160	15.90	30	
Hexachloroethane	3.7	0.04	0.2	ug/L	5.00		74.2	30-160	19.40	30	
N-Nitroso-di-n-Propylamine	4.6	0.04	0.2	ug/L	5.00		92.6	30-160	15.10	30	
4-Methylphenol	3.7	0.03	0.2	ug/L	5.00		74.5	30-160	15.60	30	
Nitrobenzene	4.4	0.03	0.2	ug/L	5.00		88.7	30-160	14.30	30	
Isophorone	6.4	0.03	0.2	ug/L	5.00		128	30-160	13.80	30	
2-Nitrophenol	4.6	0.04	1.0	ug/L	5.00		92.8	30-160	16.00	30	
2,4-Dimethylphenol	10.8	0.3	1.0	ug/L	13.0		83.2	30-160	12.60	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLB0678-BSD1)											
						Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 18:20					
Bis(2-Chloroethoxy)methane	5.2	0.03	0.2	ug/L	5.00		104	30-160	11.10	30	
2,4-Dichlorophenol	16.1	0.1	1.0	ug/L	13.0		124	30-160	10.10	30	
1,2,4-Trichlorobenzene	4.0	0.03	0.2	ug/L	5.00		80.7	30-160	13.60	30	
Naphthalene	4.4	0.03	0.2	ug/L	5.00		87.5	30-160	14.00	30	
Benzoic acid	14.0	0.1	2.0	ug/L	23.0		61.0	30-160	17.00	30	
4-Chloroaniline	3.6	0.04	1.0	ug/L	13.0		27.7	30-160	33.00	30	*
Hexachlorobutadiene	4.0	0.04	0.2	ug/L	5.00		79.3	30-160	19.60	30	
4-Chloro-3-Methylphenol	14.3	0.1	1.0	ug/L	13.0		110	30-160	12.60	30	
2-Methylnaphthalene	4.3	0.03	0.2	ug/L	5.00		85.8	30-160	12.80	30	
Hexachlorocyclopentadiene	8.1	0.1	1.0	ug/L	13.0		62.0	30-160	22.70	30	
2,4,6-Trichlorophenol	14.6	0.2	1.0	ug/L	13.0		112	30-160	14.50	30	
2,4,5-Trichlorophenol	13.8	0.1	1.0	ug/L	13.0		106	30-160	13.50	30	
2-Chloronaphthalene	4.3	0.03	0.2	ug/L	5.00		85.5	30-160	14.10	30	
2-Nitroaniline	12.5	0.2	1.0	ug/L	13.0		96.2	30-160	13.70	30	
Acenaphthylene	4.4	0.02	0.2	ug/L	5.00		87.2	30-160	13.50	30	
Dimethylphthalate	4.9	0.04	0.2	ug/L	5.00		98.5	30-160	12.80	30	
2,6-Dinitrotoluene	15.0	0.2	1.0	ug/L	13.0		115	30-160	13.80	30	
Acenaphthene	4.4	0.03	0.2	ug/L	5.00		88.3	30-160	13.20	30	
3-Nitroaniline	12.9	0.2	1.0	ug/L	13.0		98.9	30-160	16.20	30	
2,4-Dinitrophenol	24.4	0.2	2.0	ug/L	23.0		106	30-160	20.50	30	Q
Dibenzofuran	4.4	0.02	0.2	ug/L	5.00		88.7	30-160	12.70	30	
4-Nitrophenol	5.0	0.06	1.0	ug/L	13.0		38.7	30-160	15.80	30	
2,4-Dinitrotoluene	13.7	0.1	1.0	ug/L	13.0		105	30-160	13.60	30	
Fluorene	4.5	0.02	0.2	ug/L	5.00		90.1	30-160	13.00	30	
4-Chlorophenylphenyl ether	4.7	0.02	0.2	ug/L	5.00		95.0	30-160	12.00	30	
Diethyl phthalate	5.7	0.06	0.2	ug/L	5.00		115	30-160	9.44	30	
4-Nitroaniline	13.6	0.2	1.0	ug/L	13.0		105	30-160	15.80	30	
4,6-Dinitro-2-methylphenol	28.2	0.4	2.0	ug/L	23.0		123	30-160	16.90	30	
N-Nitrosodiphenylamine	4.6	0.03	0.2	ug/L	5.00		91.3	30-160	13.20	30	
4-Bromophenyl phenyl ether	5.2	0.02	0.2	ug/L	5.00		103	30-160	15.40	30	
Hexachlorobenzene	4.8	0.04	0.2	ug/L	5.00		96.9	30-160	18.00	30	
Pentachlorophenol	15.1	0.1	1.0	ug/L	13.0		116	30-160	15.40	30	
Phenanthrene	4.5	0.02	0.2	ug/L	5.00		90.9	30-160	15.30	30	
Anthracene	4.2	0.03	0.2	ug/L	5.00		83.2	30-160	14.90	30	
Carbazole	4.7	0.04	0.2	ug/L	5.00		94.2	30-160	12.80	30	



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Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLB0678 - EPA 8270E

Instrument: NT10 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLB0678-BSD1)						Prepared: 28-Feb-2023 Analyzed: 20-Mar-2023 18:20					
Di-n-Butylphthalate	5.0	0.05	0.2	ug/L	5.00	100	30-160	10.70	30	B	
Fluoranthene	4.2	0.03	0.2	ug/L	5.00	84.3	30-160	16.40	30		
Pyrene	4.1	0.03	0.2	ug/L	5.00	82.4	30-160	5.63	30		
Butylbenzylphthalate	4.8	0.07	0.2	ug/L	5.00	96.4	30-160	13.20	30		
Benzo(a)anthracene	4.6	0.04	0.2	ug/L	5.00	91.0	30-160	13.70	30		
3,3'-Dichlorobenzidine	10.2	0.3	1.0	ug/L	13.0	78.2	30-160	14.30	30		
Chrysene	4.4	0.04	0.2	ug/L	5.00	88.1	30-160	14.50	30		
bis(2-Ethylhexyl)phthalate	4.4	0.2	0.2	ug/L	5.00	88.7	30-160	13.90	30		
Di-n-Octylphthalate	4.8	0.05	0.2	ug/L	5.00	95.6	30-160	13.40	30		
Benzo(a)pyrene	4.6	0.05	0.2	ug/L	5.00	93.0	30-160	13.50	30		
Indeno(1,2,3-cd)pyrene	4.3	0.06	0.2	ug/L	5.00	86.4	30-160	14.70	30		
Dibenzo(a,h)anthracene	4.3	0.07	0.2	ug/L	5.00	86.1	30-160	14.30	30		
Benzo(g,h,i)perylene	4.3	0.04	0.2	ug/L	5.00	86.9	30-160	13.90	30		
1-Methylnaphthalene	4.6	0.03	0.2	ug/L	5.00	91.4	30-160	13.10	30		
Surrogate: 2-Fluorophenol	4.69			ug/L	7.50	62.5	30-160				
Surrogate: Phenol-d5	3.08			ug/L	7.50	41.0	30-160				
Surrogate: 2-Chlorophenol-d4	7.63			ug/L	7.50	102	30-160				
Surrogate: 1,2-Dichlorobenzene-d4	4.15			ug/L	5.00	83.0	30-160				
Surrogate: Nitrobenzene-d5	4.49			ug/L	5.00	89.7	30-160				
Surrogate: 2-Fluorobiphenyl	4.30			ug/L	5.00	86.1	30-160				
Surrogate: 2,4,6-Tribromophenol	8.19			ug/L	7.50	109	30-160				
Surrogate: p-Terphenyl-d14	4.39			ug/L	5.00	87.7	30-160				



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLB0676 - EPA 8270E-SIM

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0676-BLK1)											
						Prepared: 01-Mar-2023 Analyzed: 09-Mar-2023 11:07					
Naphthalene	0.005	0.001	0.010	ug/L							J
2-Methylnaphthalene	0.003	0.001	0.010	ug/L							J
1-Methylnaphthalene	0.002	0.0009	0.010	ug/L							J
Acenaphthylene	ND	0.002	0.010	ug/L							U
Acenaphthene	ND	0.003	0.010	ug/L							U
Dibenzofuran	0.002	0.002	0.010	ug/L							J
Fluorene	ND	0.002	0.010	ug/L							U
Phenanthrene	0.002	0.001	0.010	ug/L							J
Anthracene	ND	0.001	0.010	ug/L							U
Carbazole	ND	0.001	0.010	ug/L							U
Fluoranthene	ND	0.002	0.010	ug/L							U
Pyrene	0.001	0.001	0.010	ug/L							J
Benzo(a)anthracene	0.0008	0.0008	0.010	ug/L							J
Chrysene	ND	0.0009	0.010	ug/L							U
Benzo(b)fluoranthene	ND	0.0005	0.010	ug/L							U
Benzo(k)fluoranthene	ND	0.003	0.010	ug/L							U
Benzo(j)fluoranthene	ND	0.002	0.010	ug/L							U
Benzofluoranthenes, Total	ND	0.004	0.010	ug/L							U
Benzo(a)pyrene	ND	0.002	0.010	ug/L							U
Perylene	ND	0.006	0.010	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.001	0.010	ug/L							U
Dibenzo(a,h)anthracene	ND	0.001	0.010	ug/L							U
Benzo(g,h,i)perylene	ND	0.001	0.010	ug/L							U
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.151			ug/L	0.300		50.3	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.0897			ug/L	0.300		29.9	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.177			ug/L	0.300		58.9	57-120			

LCS (BLB0676-BS1)											
						Prepared: 01-Mar-2023 Analyzed: 09-Mar-2023 11:39					
Naphthalene	0.179	0.001	0.010	ug/L	0.300		59.8	37-120			
2-Methylnaphthalene	0.187	0.001	0.010	ug/L	0.300		62.4	37-120			
1-Methylnaphthalene	0.184	0.0009	0.010	ug/L	0.300		61.3	29-120			
Acenaphthylene	0.184	0.002	0.010	ug/L	0.300		61.3	41-120			
Acenaphthene	0.198	0.003	0.010	ug/L	0.300		66.0	41-120			
Dibenzofuran	0.208	0.002	0.010	ug/L	0.300		69.2	38-120			
Fluorene	0.207	0.002	0.010	ug/L	0.300		69.0	43-120			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLB0676 - EPA 8270E-SIM

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLB0676-BS1)						Prepared: 01-Mar-2023 Analyzed: 09-Mar-2023 11:39					
Phenanthrene	0.213	0.001	0.010	ug/L	0.300		71.2	41-120			
Anthracene	0.201	0.001	0.010	ug/L	0.300		67.0	40-120			
Carbazole	0.217	0.001	0.010	ug/L	0.300		72.3	30-160			
Fluoranthene	0.222	0.002	0.010	ug/L	0.300		74.1	45-120			
Pyrene	0.216	0.001	0.010	ug/L	0.300		71.9	41-120			
Benzo(a)anthracene	0.212	0.0008	0.010	ug/L	0.300		70.5	42-120			
Chrysene	0.230	0.0009	0.010	ug/L	0.300		76.7	44-120			
Benzo(b)fluoranthene	0.234	0.0005	0.010	ug/L	0.300		77.9	44-120			
Benzo(k)fluoranthene	0.241	0.003	0.010	ug/L	0.300		80.2	50-120			
Benzo(j)fluoranthene	0.270	0.002	0.010	ug/L	0.300		90.1	39-160			
Benzofluoranthenes, Total	0.745	0.004	0.010	ug/L	0.900		82.7	46-120			
Benzo(a)pyrene	0.167	0.002	0.010	ug/L	0.300		55.5	35-120			
Perylene	0.030	0.006	0.010	ug/L	0.300		10.0	30-160			*
Indeno(1,2,3-cd)pyrene	0.161	0.001	0.010	ug/L	0.300		53.7	37-120			
Dibenzo(a,h)anthracene	0.158	0.001	0.010	ug/L	0.300		52.7	34-120			
Benzo(g,h,i)perylene	0.147	0.001	0.010	ug/L	0.300		48.9	38-120			Q
Surrogate: 2-Methylnaphthalene-d10	0.147			ug/L	0.300		49.1	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.108			ug/L	0.300		35.8	29-120			
Surrogate: Fluoranthene-d10	0.180			ug/L	0.300		59.9	57-120			
LCS Dup (BLB0676-BSD1)						Prepared: 01-Mar-2023 Analyzed: 09-Mar-2023 12:10					
Naphthalene	0.203	0.001	0.010	ug/L	0.300		67.7	37-120	12.40	30	
2-Methylnaphthalene	0.208	0.001	0.010	ug/L	0.300		69.5	37-120	10.60	30	
1-Methylnaphthalene	0.207	0.0009	0.010	ug/L	0.300		68.9	29-120	11.70	30	
Acenaphthylene	0.202	0.002	0.010	ug/L	0.300		67.3	41-120	9.24	30	
Acenaphthene	0.217	0.003	0.010	ug/L	0.300		72.4	41-120	9.25	30	
Dibenzofuran	0.223	0.002	0.010	ug/L	0.300		74.4	38-120	7.17	30	
Fluorene	0.219	0.002	0.010	ug/L	0.300		73.0	43-120	5.72	30	
Phenanthrene	0.225	0.001	0.010	ug/L	0.300		74.9	41-120	5.11	30	
Anthracene	0.217	0.001	0.010	ug/L	0.300		72.3	40-120	7.55	30	
Carbazole	0.228	0.001	0.010	ug/L	0.300		76.0	30-160	4.94	30	
Fluoranthene	0.231	0.002	0.010	ug/L	0.300		76.9	45-120	3.67	30	
Pyrene	0.225	0.001	0.010	ug/L	0.300		75.0	41-120	4.22	30	
Benzo(a)anthracene	0.226	0.0008	0.010	ug/L	0.300		75.3	42-120	6.53	30	
Chrysene	0.243	0.0009	0.010	ug/L	0.300		81.1	44-120	5.56	30	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLB0676 - EPA 8270E-SIM

Instrument: NT11 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLB0676-BSD1)						Prepared: 01-Mar-2023 Analyzed: 09-Mar-2023 12:10					
Benzo(b)fluoranthene	0.232	0.0005	0.010	ug/L	0.300		77.5	44-120	0.52	30	
Benzo(k)fluoranthene	0.244	0.003	0.010	ug/L	0.300		81.4	50-120	1.43	30	
Benzo(j)fluoranthene	0.273	0.002	0.010	ug/L	0.300		91.0	39-160	1.04	30	
Benzofluoranthenes, Total	0.750	0.004	0.010	ug/L	0.900		83.3	46-120	0.68	30	
Benzo(a)pyrene	0.217	0.002	0.010	ug/L	0.300		72.3	35-120	26.20	30	
Perylene	0.155	0.006	0.010	ug/L	0.300		51.8	30-160	135.00	30	*
Indeno(1,2,3-cd)pyrene	0.169	0.001	0.010	ug/L	0.300		56.4	37-120	4.91	30	
Dibenzo(a,h)anthracene	0.167	0.001	0.010	ug/L	0.300		55.7	34-120	5.47	30	
Benzo(g,h,i)perylene	0.154	0.001	0.010	ug/L	0.300		51.2	38-120	4.56	30	Q
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.161			ug/L	0.300		53.7	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.108			ug/L	0.300		36.1	29-120			
<i>Surrogate: Fluoranthene-d10</i>	0.181			ug/L	0.300		60.3	57-120			



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Reported:
29-Mar-2023 20:47

Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BLB0675 - NWTPH-Dx

Instrument: FID4 Analyst: AA

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0675-BLK1)		Prepared: 28-Feb-2023 Analyzed: 06-Mar-2023 12:34								
Diesel Range Organics (C12-C24)	ND	0.100	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L							U
<i>Surrogate: o-Terphenyl</i>	0.195		mg/L	0.225	86.6		50-150			
LCS (BLB0675-BS1)		Prepared: 28-Feb-2023 Analyzed: 06-Mar-2023 12:53								
Diesel Range Organics (C12-C24)	2.61	0.100	mg/L	3.00	86.8		56-120			
<i>Surrogate: o-Terphenyl</i>	0.207		mg/L	0.225	92.0		50-150			
LCS Dup (BLB0675-BSD1)		Prepared: 28-Feb-2023 Analyzed: 06-Mar-2023 13:13								
Diesel Range Organics (C12-C24)	2.65	0.100	mg/L	3.00	88.4		56-120	1.79	30	
<i>Surrogate: o-Terphenyl</i>	0.209		mg/L	0.225	92.8		50-150			



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
29-Mar-2023 20:47

Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BLB0677 - EPA 8082A

Instrument: ECD7 Analyst: RJL

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0677-BLK1)											
						Prepared: 02-Mar-2023	Analyzed: 10-Mar-2023 12:59				
Aroclor 1016	ND	0.002	0.010	ug/L							U
Aroclor 1221	ND	0.002	0.010	ug/L							U
Aroclor 1232	ND	0.002	0.010	ug/L							U
Aroclor 1242	ND	0.002	0.010	ug/L							U
Aroclor 1248	ND	0.002	0.010	ug/L							U
Aroclor 1254	ND	0.002	0.010	ug/L							U
Aroclor 1260	ND	0.003	0.010	ug/L							U
Aroclor 1262	ND	0.003	0.010	ug/L							U
Aroclor 1268	ND	0.003	0.010	ug/L							U
Surrogate: Decachlorobiphenyl	0.00998			ug/L	0.0200		49.9	29-120			
Surrogate: Tetrachlorometaxylene	0.00967			ug/L	0.0200		48.4	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.00967			ug/L	0.0200		48.4	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.00913			ug/L	0.0200		45.7	32-120			
LCS (BLB0677-BS1)											
						Prepared: 02-Mar-2023	Analyzed: 10-Mar-2023 13:20				
Aroclor 1016	0.030	0.002	0.010	ug/L	0.0500		60.4	54-120			
Aroclor 1260	0.031	0.003	0.010	ug/L	0.0500		62.2	51-128			
Surrogate: Decachlorobiphenyl	0.00964			ug/L	0.0200		48.2	29-120			
Surrogate: Tetrachlorometaxylene	0.00908			ug/L	0.0200		45.4	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.00924			ug/L	0.0200		46.2	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.00812			ug/L	0.0200		40.6	32-120			
LCS Dup (BLB0677-BSD1)											
						Prepared: 02-Mar-2023	Analyzed: 10-Mar-2023 13:41				
Aroclor 1016 [2C]	0.031	0.002	0.010	ug/L	0.0500		62.8	54-120	9.89	30	
Aroclor 1260	0.033	0.003	0.010	ug/L	0.0500		65.8	51-128	5.53	30	
Surrogate: Decachlorobiphenyl	0.00993			ug/L	0.0200		49.7	29-120			
Surrogate: Tetrachlorometaxylene	0.00944			ug/L	0.0200		47.2	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.00980			ug/L	0.0200		49.0	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.00868			ug/L	0.0200		43.4	32-120			



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Reported:
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLC0112 - EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLC0112-BLK1)						Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 13:02					
Mercury	ND	0.000013	0.000100	mg/L							U
LCS (BLC0112-BS1)						Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 13:05					
Mercury	0.00184	0.000013	0.000100	mg/L	0.00200		92.2	80-120			



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Reported:
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLC0206 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLC0206-BLK1)						Prepared: 08-Mar-2023 Analyzed: 10-Mar-2023 17:09						
Antimony	121	ND	0.101	0.200	ug/L							U
Beryllium	9	ND	0.0171	0.200	ug/L							U
Chromium	52	ND	0.260	0.500	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Silver	107	ND	0.0220	0.200	ug/L							U
Thallium	205	ND	0.0234	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
Cadmium	111	ND	0.0300	0.100	ug/L							U
Copper	63	ND	0.173	0.500	ug/L							U
Nickel	60	ND	0.0792	0.500	ug/L							U
Selenium	78	ND	0.179	0.500	ug/L							U
Zinc	66	ND	2.92	6.00	ug/L							U

LCS (BLC0206-BS1)						Prepared: 08-Mar-2023 Analyzed: 10-Mar-2023 17:14						
Antimony	121	25.2	0.101	0.200	ug/L	25.0		101	80-120			
Beryllium	9	24.2	0.0171	0.200	ug/L	25.0		96.7	80-120			
Chromium	52	25.2	0.260	0.500	ug/L	25.0		101	80-120			
Lead	208	25.9	0.0513	0.100	ug/L	25.0		104	80-120			
Silver	107	24.8	0.0220	0.200	ug/L	25.0		99.3	80-120			
Thallium	205	25.4	0.0234	0.200	ug/L	25.0		102	80-120			
Arsenic	75a	24.6	0.0373	0.200	ug/L	25.0		98.3	80-120			
Cadmium	111	25.7	0.0300	0.100	ug/L	25.0		103	80-120			
Copper	63	25.4	0.173	0.500	ug/L	25.0		102	80-120			
Nickel	60	25.1	0.0792	0.500	ug/L	25.0		100	80-120			
Selenium	78	80.6	0.179	0.500	ug/L	80.0		101	80-120			
Zinc	66	81.2	2.92	6.00	ug/L	80.0		101	80-120			



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLC0113 - EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLC0113-BLK1)						Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 13:51					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L							U
LCS (BLC0113-BS1)						Prepared: 06-Mar-2023 Analyzed: 07-Mar-2023 13:54					
Mercury, Dissolved	0.00182	0.000013	0.000100	mg/L	0.00200		91.0	80-120			



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLC0207 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLC0207-BLK1)						Prepared: 08-Mar-2023 Analyzed: 10-Mar-2023 17:19						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Beryllium, Dissolved	9	ND	0.0171	0.200	ug/L							U
Chromium, Dissolved	52	ND	0.260	0.500	ug/L							U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L							U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L							U
Copper, Dissolved	63	ND	0.173	0.500	ug/L							U
Nickel, Dissolved	60	ND	0.0792	0.500	ug/L							U
Selenium, Dissolved	78	ND	0.179	0.500	ug/L							U
Zinc, Dissolved	66	ND	2.92	6.00	ug/L							U

LCS (BLC0207-BS1)						Prepared: 08-Mar-2023 Analyzed: 10-Mar-2023 17:24						
Antimony, Dissolved	121	24.8	0.101	0.200	ug/L	25.0		99.1	80-120			
Beryllium, Dissolved	9	25.8	0.0171	0.200	ug/L	25.0		103	80-120			
Chromium, Dissolved	52	24.6	0.260	0.500	ug/L	25.0		98.3	80-120			
Lead, Dissolved	208	25.4	0.0513	0.100	ug/L	25.0		101	80-120			
Silver, Dissolved	107	24.8	0.0220	0.200	ug/L	25.0		99.0	80-120			
Thallium, Dissolved	205	25.3	0.0234	0.200	ug/L	25.0		101	80-120			
Arsenic, Dissolved	75a	24.2	0.0373	0.200	ug/L	25.0		96.9	80-120			
Cadmium, Dissolved	111	26.1	0.0300	0.100	ug/L	25.0		104	80-120			
Copper, Dissolved	63	25.0	0.173	0.500	ug/L	25.0		100	80-120			
Nickel, Dissolved	60	24.4	0.0792	0.500	ug/L	25.0		97.5	80-120			
Selenium, Dissolved	78	79.0	0.179	0.500	ug/L	80.0		98.8	80-120			
Zinc, Dissolved	66	80.7	2.92	6.00	ug/L	80.0		101	80-120			



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Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Silver-107	WADOE, DoD-ELAP, NELAP
Silver-107	DoD-ELAP, NELAP
Beryllium-9	WADOE, DoD-ELAP, NELAP
Beryllium-9	NELAP, WADOE, DoD-ELAP
Chromium-52	NELAP, WADOE, DoD-ELAP, ADEC
Lead-208	NELAP, WADOE, DoD-ELAP, ADEC
Antimony-121	NELAP, WADOE, DoD-ELAP
Thallium-205	NELAP, WADOE, DoD-ELAP
Thallium-205	WADOE, DoD-ELAP, NELAP
Silver-107	DoD-ELAP, NELAP
Silver-107	WADOE, DoD-ELAP, NELAP
Beryllium-9	NELAP, WADOE, DoD-ELAP
Beryllium-9	WADOE, DoD-ELAP, NELAP
Chromium-52	NELAP, WADOE, DoD-ELAP, ADEC
Lead-208	NELAP, WADOE, DoD-ELAP, ADEC
Antimony-121	NELAP, WADOE, DoD-ELAP
Thallium-205	NELAP, WADOE, DoD-ELAP
Thallium-205	WADOE, DoD-ELAP, NELAP
EPA 6020B UCT-KED in Water	
Arsenic-75a	WADOE, DoD-ELAP, ADEC, NELAP
Arsenic-75a	NELAP, WADOE, DoD-ELAP, ADEC
Cadmium-111	NELAP, WADOE, DoD-ELAP, ADEC
Copper-63	NELAP, WADOE, DoD-ELAP
Nickel-60	NELAP, WADOE, DoD-ELAP, ADEC
Selenium-78	NELAP, WADOE, DoD-ELAP
Zinc-66	WADOE, DoD-ELAP
Zinc-66	NELAP, WADOE, DoD-ELAP
Arsenic-75a	NELAP, WADOE, DoD-ELAP, ADEC
Arsenic-75a	WADOE, DoD-ELAP, ADEC, NELAP
Cadmium-111	NELAP, WADOE, DoD-ELAP, ADEC



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Copper-63	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP
Zinc-66	NELAP,WADOE,DoD-ELAP
Zinc-66	WADOE,DoD-ELAP

EPA 7470A in Water

Mercury	WADOE,NELAP,DoD-ELAP
Mercury	WADOE,NELAP,DoD-ELAP

EPA 8082A in Water

Aroclor 1016	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1016 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 [2C]	WADOE,DoD-ELAP,NELAP,ADEC

EPA 8260D in Water

Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE



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EPA 8270E in Water

Phenol	NELAP,DoD-ELAP
bis(2-chloroethyl) ether	NELAP,DoD-ELAP
2-Chlorophenol	NELAP,DoD-ELAP
1,3-Dichlorobenzene	NELAP,DoD-ELAP
1,4-Dichlorobenzene	NELAP,DoD-ELAP
1,2-Dichlorobenzene	NELAP,DoD-ELAP
Benzyl Alcohol	NELAP,DoD-ELAP
2,2'-Oxybis(1-chloropropane)	NELAP,DoD-ELAP
2-Methylphenol	NELAP,DoD-ELAP
Hexachloroethane	NELAP,DoD-ELAP
N-Nitroso-di-n-Propylamine	NELAP,DoD-ELAP
4-Methylphenol	NELAP,DoD-ELAP
Nitrobenzene	NELAP,DoD-ELAP
Isophorone	NELAP,DoD-ELAP
2-Nitrophenol	NELAP,DoD-ELAP
2,4-Dimethylphenol	NELAP,DoD-ELAP
Bis(2-Chloroethoxy)methane	NELAP,DoD-ELAP
2,4-Dichlorophenol	NELAP,DoD-ELAP
1,2,4-Trichlorobenzene	NELAP,DoD-ELAP
Naphthalene	NELAP,DoD-ELAP
Benzoic acid	NELAP,DoD-ELAP
4-Chloroaniline	NELAP,DoD-ELAP
Hexachlorobutadiene	NELAP,DoD-ELAP
4-Chloro-3-Methylphenol	NELAP,DoD-ELAP
2-Methylnaphthalene	NELAP,DoD-ELAP
Hexachlorocyclopentadiene	NELAP,DoD-ELAP
2,4,6-Trichlorophenol	NELAP,DoD-ELAP
2,4,5-Trichlorophenol	NELAP,DoD-ELAP
2-Chloronaphthalene	NELAP,DoD-ELAP
2-Nitroaniline	NELAP,DoD-ELAP
Acenaphthylene	NELAP,DoD-ELAP
Dimethylphthalate	NELAP,DoD-ELAP



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2,6-Dinitrotoluene	NELAP,DoD-ELAP
Acenaphthene	NELAP,DoD-ELAP
3-Nitroaniline	NELAP,DoD-ELAP
2,4-Dinitrophenol	NELAP,DoD-ELAP
Dibenzofuran	NELAP,DoD-ELAP
4-Nitrophenol	NELAP,DoD-ELAP
2,4-Dinitrotoluene	NELAP,DoD-ELAP
Fluorene	NELAP,DoD-ELAP
4-Chlorophenylphenyl ether	NELAP,DoD-ELAP
Diethyl phthalate	NELAP,DoD-ELAP
4-Nitroaniline	NELAP,DoD-ELAP
4,6-Dinitro-2-methylphenol	NELAP,DoD-ELAP
N-Nitrosodiphenylamine	NELAP,DoD-ELAP
4-Bromophenyl phenyl ether	NELAP,DoD-ELAP
Hexachlorobenzene	NELAP,DoD-ELAP
Pentachlorophenol	NELAP,DoD-ELAP
Phenanthrene	NELAP,DoD-ELAP
Anthracene	NELAP,DoD-ELAP
Carbazole	NELAP,DoD-ELAP
Di-n-Butylphthalate	NELAP,DoD-ELAP
Fluoranthene	NELAP,DoD-ELAP
Pyrene	NELAP,DoD-ELAP
Butylbenzylphthalate	NELAP,DoD-ELAP
Benzo(a)anthracene	NELAP,DoD-ELAP
3,3'-Dichlorobenzidine	NELAP,DoD-ELAP
Chrysene	NELAP,DoD-ELAP
bis(2-Ethylhexyl)phthalate	NELAP,DoD-ELAP
Di-n-Octylphthalate	NELAP,DoD-ELAP
Benzo(a)fluoranthenes, Total	NELAP
Benzo(a)pyrene	NELAP,DoD-ELAP
Indeno(1,2,3-cd)pyrene	NELAP,DoD-ELAP
Dibenzo(a,h)anthracene	NELAP,DoD-ELAP
Benzo(g,h,i)perylene	NELAP,DoD-ELAP



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1-Methylnaphthalene NELAP,DoD-ELAP

EPA 8270E-SIM in Water

Naphthalene ADEC,DoD-ELAP,NELAP,WADOE
2-Methylnaphthalene ADEC,DoD-ELAP,NELAP
1-Methylnaphthalene ADEC,DoD-ELAP,NELAP,WADOE
Acenaphthylene ADEC,DoD-ELAP,NELAP,WADOE
Acenaphthene ADEC,DoD-ELAP,NELAP,WADOE
Dibenzofuran ADEC,DoD-ELAP,NELAP
Fluorene ADEC,DoD-ELAP,NELAP,WADOE
Phenanthrene ADEC,DoD-ELAP,NELAP,WADOE
Anthracene ADEC,DoD-ELAP,NELAP,WADOE
Carbazole NELAP
Fluoranthene ADEC,DoD-ELAP,NELAP,WADOE
Pyrene ADEC,DoD-ELAP,NELAP,WADOE
Benzo(a)anthracene ADEC,DoD-ELAP,NELAP,WADOE
Chrysene ADEC,DoD-ELAP,NELAP,WADOE
Benzo(b)fluoranthene ADEC,DoD-ELAP,NELAP,WADOE
Benzo(k)fluoranthene ADEC,DoD-ELAP,NELAP,WADOE
Benzo(j)fluoranthene ADEC,DoD-ELAP,NELAP,WADOE
Benzo(a)pyrene ADEC,DoD-ELAP,NELAP,WADOE
Perylene ADEC,NELAP
Indeno(1,2,3-cd)pyrene ADEC,DoD-ELAP,NELAP,WADOE
Dibenzo(a,h)anthracene ADEC,DoD-ELAP,NELAP,WADOE
Benzo(g,h,i)perylene ADEC,DoD-ELAP,NELAP,WADOE

NWTPH-Dx in Water

Diesel Range Organics (C12-C2 DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24- DoD-ELAP,NELAP,WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-N WADOE,DoD-ELAP



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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



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Notes and Definitions

- * Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- D1 Surrogate was not detected due to sample extract dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- J Estimated concentration value detected below the reporting limit.
- L Analyte concentration is ≤ 5 times the reporting limit and the replicate control limit defaults to \pm RL instead of 20% RPD
- P1 The reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ($< 20\%$ RSD, $< 20\%$ drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

24 June 2023

Ali Cochrane
Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle, WA 98104

RE: West Duwamish CSO (150218)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
23F0084

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Shelly Fishel, Project Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request



Analytical Resources, LLC
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number: 23F0084	Turn-around Requested: Standard	Page: 1 of 1
ARI Client Company: Aspect Consulting	Phone:	Date: 6/1/23 Ice Present? ✓
Client Contact: Al: Lechrane acechrane@aspectconsulting.com Carla Brock cbrock@aspectconsulting.com		No. of Coolers: 4 Cooler Temps: See CRP

Client Project Name: West Duwamish CSO	Analysis Requested	Notes/Comments
Client Project #: 150218		
Samplers: David Mackay		

Sample ID	Date	Time	Matrix	No. Containers	Analysis Requested								Notes/Comments
					NWTPH -GX	NWTPH -DX	Metals Primary Polychlorinated Metals	Dissolved Metals Primary Polychlorinated Metals	SULCS 8270 +PAH 8220P -SEM	PCBs 8882	VOLs 82600	Hold for PCB congeners	
MW-09-053123	5/31/23	1545	L	17	X	X	X	X	X	X	X	X	
MW-10-053123		1355	L	17									
MW-11-053123		1120	L	34									- Includes MS/MSD
MW-15-053123		0900	L	17									
TB	5/23/23		L										

Comments/Special Instructions Level 2 Data Validation MS/MSD analysis needed See QAPP for additional details	Relinquished by: (Signature) <i>David Mackay</i>	Received by: (Signature) <i>Matthew Penner</i>	Relinquished by:	Received by:
	Printed Name: David Mackay	Printed Name: Matthew Penner	(Signature)	(Signature)
	Company: Aspect	Company: AR LLC	Printed Name:	Printed Name:
	Date & Time: 6/1/23 1555	Date & Time: 06/01/23 1555	Company:	Company:
			Date & Time:	Date & Time:

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: All samples submitted to ARI will be appropriately discarded no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer, unless alternate retention schedules have been established by work-order or contract.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
MW-09-053123	23F0084-01	Water	31-May-2023 15:45	01-Jun-2023 15:55
MW-09-053123	23F0084-02	Water	31-May-2023 15:45	01-Jun-2023 15:55
MW-10-053123	23F0084-03	Water	31-May-2023 13:55	01-Jun-2023 15:55
MW-10-053123	23F0084-04	Water	31-May-2023 13:55	01-Jun-2023 15:55
MW-11-053123	23F0084-05	Water	31-May-2023 11:20	01-Jun-2023 15:55
MW-11-053123	23F0084-06	Water	31-May-2023 11:20	01-Jun-2023 15:55
MW-15-053123	23F0084-07	Water	31-May-2023 09:00	01-Jun-2023 15:55
MW-15-053123	23F0084-08	Water	31-May-2023 09:00	01-Jun-2023 15:55
TB	23F0084-09	Water	31-May-2023 09:00	01-Jun-2023 15:55



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Work Order Case Narrative

Client: Aspect Consulting, LLC.
Project: West Duwamish CSO
Project Number: 150218
Work Order: 23F0084

Sample receipt

Sample(s) as listed on the preceding page were received 01-Jun-2023 15:55 under ARI work order 23F0084. For details regarding sample receipt, please refer to the Cooler Receipt Form.

PCB Aroclors - EPA Method SW8082A

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except as follows. Aroclor 1260 was out of control low in continuing calibration verification SLF0328-CCV4 on both columns.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except 1,2-Dibromo-3-chloropropane which was out of control low in the initial calibration verification SLF0102-ICV1. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.



Aspect Consulting, LLC.
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits except as flagged which were all out of control low..

Gasoline by NWTPH-g (GC/MS)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Semivolatiles - EPA Method SW8270E

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except as follows. Hexachlorocyclopentadine was out of control low and 2-Nitrophenol, Hexachlorobutadiene, 4-Nitrophenol, Hexachlorobenzene and surrogate 2,4,6-Tribromophenol were out of control high in the initial calibration verifications SLR0251-ICV1 and SLF0251-ICV2. All samples which contain analyte have been flagged with a "Q" qualifier. Hexachlorocyclopentadine was out of control low and Hexachlorobutadiene and surrogate 2,4,6-Tribromophenol were out of control high in the continuing calibration verification SLF0251-CCV1.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except 2,4,6-Tribromophenol which was out of control high in all samples and QC samples. The deviations have been flagged.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD)



Aspect Consulting, LLC.
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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

were within control limits except Hexachlorocyclopentadiene, 4-Chloroaniline and Phenol which percent recoveries were out of control low in the blank spike and blank spike duplicate. The deviations have been flagged.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits except as follows. Hexachlorocyclopentadiene and Phenol percent recoveries were out of control low in the matrix spike and matrix spike duplicate. The deviations have been flagged.

Polynuclear Aromatic Hydrocarbons (PAH) - EPA Method SW8270E-SIM

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements except surrogate Dibenzo(a,h)anthracene-d14 which was out of control low in the initial calibration verifications SLF0302-ICV1 and SLF0302-ICV2. All samples which contain analyte have been flagged with a "Q" qualifier.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits except Dibenzo(a,h)anthracene-d14 which was out of control low in all samples and QC samples. The deviations have been flagged.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits except as follows. Benzo(j)fluoranthene percent recovery was out of control high and Indeno(1,2,3-cd)pyrene, Dibenzo(a,h)anthracene and Benzo(g,h,i)perylene percent recoveries were out of control low in the blank spike and blank spike duplicate. The deviations have been flagged.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Total and Dissolved Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits except as follows. Dissolve Beryllium percent recovery was out of control low in the matrix spike duplicate. The deviation has been flagged..



Aspect Consulting, LLC.
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Total and Dissolved Mercury - EPA Method 7470

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Diesel/Heavy Oil Range Organics - WA-Ecology Method NW-TPHDx

The sample(s) were extracted and analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits



WORK ORDER

23F0084

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

Preservation Confirmation

Container ID	Container Type	pH	
23F0084-01 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	Pass
23F0084-01 B	Glass NM, Amber, 1000 mL		
23F0084-01 C	Glass NM, Amber, 1000 mL		
23F0084-01 D	Glass NM, Amber, 1000 mL		
23F0084-01 E	Glass NM, Amber, 1000 mL		
23F0084-01 F	Glass NM, Amber, 500 mL		
23F0084-01 G	Glass NM, Amber, 500 mL		
23F0084-01 H	Glass NM, Amber, 500 mL		
23F0084-01 I	Glass NM, Amber, 500 mL		
23F0084-01 J	Glass NM, Amber, 500 mL		
23F0084-01 K	Glass NM, Amber, 500 mL		
23F0084-01 L	VOA Vial, Clear, 40 mL, HCL		
23F0084-01 M	VOA Vial, Clear, 40 mL, HCL		
23F0084-01 N	VOA Vial, Clear, 40 mL, HCL		
23F0084-01 O	VOA Vial, Clear, 40 mL, HCL		
23F0084-01 P	VOA Vial, Clear, 40 mL, HCL		
23F0084-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	7.2	Pass
23F0084-03 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	Pass
23F0084-03 B	Glass NM, Amber, 1000 mL		
23F0084-03 C	Glass NM, Amber, 1000 mL		
23F0084-03 D	Glass NM, Amber, 1000 mL		
23F0084-03 E	Glass NM, Amber, 1000 mL		
23F0084-03 F	Glass NM, Amber, 500 mL		
23F0084-03 G	Glass NM, Amber, 500 mL		
23F0084-03 H	Glass NM, Amber, 500 mL		
23F0084-03 I	Glass NM, Amber, 500 mL		
23F0084-03 J	Glass NM, Amber, 500 mL		
23F0084-03 K	Glass NM, Amber, 500 mL		
23F0084-03 L	VOA Vial, Clear, 40 mL, HCL		
23F0084-03 M	VOA Vial, Clear, 40 mL, HCL		
23F0084-03 N	VOA Vial, Clear, 40 mL, HCL		
23F0084-03 O	VOA Vial, Clear, 40 mL, HCL		
23F0084-03 P	VOA Vial, Clear, 40 mL, HCL		
23F0084-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	7.2	Pass



WORK ORDER

23F0084

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

23F0084-05 A	HDPE NM, 500 mL, 1:1 HNO3	✓	Pass
23F0084-05 AA	VOA Vial, Clear, 40 mL, HCL		
23F0084-05 AB	VOA Vial, Clear, 40 mL, HCL		
23F0084-05 AC	VOA Vial, Clear, 40 mL, HCL		
23F0084-05 AD	VOA Vial, Clear, 40 mL, HCL		
23F0084-05 AE	VOA Vial, Clear, 40 mL, HCL		
23F0084-05 AF	VOA Vial, Clear, 40 mL, HCL		
23F0084-05 B	HDPE NM, 500 mL, 1:1 HNO3	✓	Pass
23F0084-05 C	Glass NM, Amber, 1000 mL		
23F0084-05 D	Glass NM, Amber, 1000 mL		
23F0084-05 E	Glass NM, Amber, 1000 mL		
23F0084-05 F	Glass NM, Amber, 1000 mL		
23F0084-05 G	Glass NM, Amber, 1000 mL		
23F0084-05 H	Glass NM, Amber, 1000 mL		
23F0084-05 I	Glass NM, Amber, 1000 mL		
23F0084-05 J	Glass NM, Amber, 1000 mL		
23F0084-05 K	Glass NM, Amber, 500 mL		
23F0084-05 L	Glass NM, Amber, 500 mL		
23F0084-05 M	Glass NM, Amber, 500 mL		
23F0084-05 N	Glass NM, Amber, 500 mL		
23F0084-05 O	Glass NM, Amber, 500 mL		
23F0084-05 P	Glass NM, Amber, 500 mL		
23F0084-05 Q	Glass NM, Amber, 500 mL		
23F0084-05 R	Glass NM, Amber, 500 mL		
23F0084-05 S	Glass NM, Amber, 500 mL		
23F0084-05 T	Glass NM, Amber, 500 mL		
23F0084-05 U	Glass NM, Amber, 500 mL		
23F0084-05 V	Glass NM, Amber, 500 mL		
23F0084-05 W	VOA Vial, Clear, 40 mL, HCL		
23F0084-05 X	VOA Vial, Clear, 40 mL, HCL		
23F0084-05 Y	VOA Vial, Clear, 40 mL, HCL		
23F0084-05 Z	VOA Vial, Clear, 40 mL, HCL		
23F0084-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	✓	Pass
23F0084-06 B	HDPE NM, 500 mL, 1:1 HNO3 (FF)	✓	Pass
23F0084-07 A	HDPE NM, 500 mL, 1:1 HNO3	✓	Pass
23F0084-07 B	Glass NM, Amber, 1000 mL		



WORK ORDER

23F0084

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Aspect Consulting, LLC.

Project Manager: Shelly Fishel

Project: West Duwamish CSO

Project Number: 150218

23F0084-07 C	Glass NM, Amber, 1000 mL		
23F0084-07 D	Glass NM, Amber, 1000 mL		
23F0084-07 E	Glass NM, Amber, 1000 mL		
23F0084-07 F	Glass NM, Amber, 500 mL		
23F0084-07 G	Glass NM, Amber, 500 mL		
23F0084-07 H	Glass NM, Amber, 500 mL		
23F0084-07 I	Glass NM, Amber, 500 mL		
23F0084-07 J	Glass NM, Amber, 500 mL		
23F0084-07 K	Glass NM, Amber, 500 mL		
23F0084-07 L	VOA Vial, Clear, 40 mL, HCL		
23F0084-07 M	VOA Vial, Clear, 40 mL, HCL		
23F0084-07 N	VOA Vial, Clear, 40 mL, HCL		
23F0084-07 O	VOA Vial, Clear, 40 mL, HCL		
23F0084-07 P	VOA Vial, Clear, 40 mL, HCL		
23F0084-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	↳	Pass
23F0084-09 A	VOA Vial, Clear, 40 mL, HCL		
23F0084-09 B	VOA Vial, Clear, 40 mL, HCL		
23F0084-09 C	VOA Vial, Clear, 40 mL, HCL		
23F0084-09 D	VOA Vial, Clear, 40 mL, HCL		

JSW

Preservation Confirmed By

06/03/23

Date



Cooler Receipt Form

ARI Client: Aspect Consulting

Project Name: West Quamish C50

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 23F0084

Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO

Were custody papers included with the cooler? YES NO

Were custody papers properly filled out (ink, signed, etc.) YES NO

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 1555 0.2° 0.4° 1.9° 2.1°

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 5029708

Cooler Accepted by: MP Date: 06/01/23 Time: 1555

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO

What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____

Was sufficient ice used (if appropriate)? NA YES NO

How were bottles sealed in plastic bags? Individually Grouped Not

Did all bottles arrive in good condition (unbroken)? YES NO

Were all bottle labels complete and legible? YES NO

Did the number of containers listed on COC match with the number of containers received? YES NO

Did all bottle labels and tags agree with custody papers? YES NO

Were all bottles used correct for the requested analyses? YES NO

Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO

Were all VOC vials free of air bubbles? NA YES NO

Was sufficient amount of sample sent in each bottle? YES NO

Date VOC Trip Blank was made at ARI NA 05/18/23

Were the sample(s) split by ARI? YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: JB~ Date: 06/03/23 Time: 0814 Labels checked by: JBW

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-09-053123
23F0084-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 15:45

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 12:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23F0084-01 O

Preparation Batch: BLF0179

Sample Size: 10 mL

Prepared: 06/07/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.23	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.05	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	1.91	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.15	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.06	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.04	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-09-053123
23F0084-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 15:45

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 12:55

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	79-34-5	1	0.03	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.05	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-09-053123
23F0084-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 15:45

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 12:55

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				<i>80-129 %</i>	<i>97.3</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>				<i>80-120 %</i>	<i>101</i>	<i>%</i>	
<i>Surrogate: 4-Bromofluorobenzene</i>				<i>80-120 %</i>	<i>96.4</i>	<i>%</i>	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				<i>80-120 %</i>	<i>102</i>	<i>%</i>	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 24-Jun-2023 11:52
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MW-09-053123
23F0084-01 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/31/2023 15:45
Instrument: NT3 Analyst: PKC Analyzed: 06/07/2023 12:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23F0084-01 O
Preparation Batch: BLF0179 Sample Size: 10 mL
Prepared: 06/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	96.4	%	



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710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-09-053123
23F0084-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/31/2023 15:45

Instrument: NT17 Analyst: VTS

Analyzed: 06/14/2023 16:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLF0094
Prepared: 06/07/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23F0084-01 E 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-09-053123
23F0084-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/31/2023 15:45

Instrument: NT17 Analyst: VTS

Analyzed: 06/14/2023 16:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	35.6 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	23.8 %	*
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	63.0 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	51.9 %	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-09-053123
23F0084-01 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/31/2023 15:45

Instrument: NT17 Analyst: VTS

Analyzed: 06/14/2023 16:00

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	71.6	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	68.3	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	105	%	Q
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	77.4	%	



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Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-09-053123
23F0084-01 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 05/31/2023 15:45

Instrument: NT18 Analyst: VTS

Analyzed: 06/20/2023 16:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLF0092
Prepared: 06/07/2023

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 23F0084-01 H 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.006	0.010	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.007	0.010	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.008	0.010	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.005	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.004	0.010	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.006	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.004	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.005	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.005	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.005	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.006	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.008	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.006	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.008	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.008	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.005	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.017	0.020	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.005	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.004	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.008	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.008	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.009	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 49.0 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 20.4 % *

Surrogate: Fluoranthene-d10

57-120 % 60.3 %



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MW-09-053123
23F0084-01 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/31/2023 15:45
Instrument: FID4 Analyst: AA Analyzed: 06/13/2023 15:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23F0084-01 F 01
Preparation Batch: BLF0090 Sample Size: 500 mL
Prepared: 06/07/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	87.0	%	



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MW-09-053123
23F0084-01 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 05/31/2023 15:45
Instrument: ECD7 Analyst: RJL Analyzed: 06/20/2023 16:22

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLF0093 Prepared: 06/07/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23F0084-01 D 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLF0159 Cleaned: 16-Jun-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23F0084-01 D 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLF0157 Cleaned: 16-Jun-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23F0084-01 D 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLF0158 Cleaned: 16-Jun-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23F0084-01 D 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	57.3 %
Surrogate: Tetrachlorometaxylene	32-120 %	60.0 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	61.7 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	61.0 %



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MW-09-053123
23F0084-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/31/2023 15:45
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/14/2023 23:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0084-01 A 01
Preparation Batch: BLF0380 Sample Size: 25 mL
Prepared: 06/13/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	2	0.520	1.00	0.622	ug/L	J, D
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-09-053123
23F0084-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED

Sampled: 05/31/2023 15:45

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/14/2023 23:49

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23F0084-01 A 01

Preparation Batch: BLF0380

Sample Size: 25 mL

Prepared: 06/13/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.20	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel	7440-02-0	1	0.0792	0.500	0.398	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.425	ug/L	J
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-09-053123
23F0084-01 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/31/2023 15:45
Instrument: HYDRA Analyst: ML Analyzed: 06/12/2023 11:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23F0084-01 A
Preparation Batch: BLF0224 Sample Size: 20 mL
Prepared: 06/08/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-09-053123
23F0084-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B Sampled: 05/31/2023 15:45
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/14/2023 23:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0084-02 A 01
Preparation Batch: BLF0385 Sample Size: 25 mL
Prepared: 06/13/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0180	ug/L	J
Chromium, Dissolved	7440-47-3	2	0.520	1.00	0.718	ug/L	J, D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-09-053123
23F0084-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/31/2023 15:45
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/14/2023 23:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0084-02 A 01
Preparation Batch: BLF0385 Sample Size: 25 mL
Prepared: 06/13/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.14	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.389	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.306	ug/L	J
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-09-053123
23F0084-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/31/2023 15:45
Instrument: HYDRA Analyst: ML Analyzed: 06/12/2023 11:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23F0084-02 A
Preparation Batch: BLF0223 Sample Size: 20 mL
Prepared: 06/08/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-10-053123
23F0084-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 13:55

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 13:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLF0179
Prepared: 06/07/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 23F0084-03 N

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.23	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.05	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	1.91	5.00	2.02	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.15	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.06	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.04	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project Number: 150218
Project Manager: Ali Cochrane

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MW-10-053123
23F0084-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 13:55

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 13:17

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	0.16	ug/L	J
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	0.24	ug/L	J
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.03	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.05	0.20	0.06	ug/L	J
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Project Number: 150218
Project Manager: Ali Cochrane

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MW-10-053123
23F0084-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 13:55

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 13:17

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	105	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	99.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	94.6	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	107	%	



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MW-10-053123
23F0084-03 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/31/2023 13:55
Instrument: NT3 Analyst: PKC Analyzed: 06/07/2023 13:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23F0084-03 N
Preparation Batch: BLF0179 Sample Size: 10 mL
Prepared: 06/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.3	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	94.6	%	



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Project Manager: Ali Cochrane

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MW-10-053123
23F0084-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/31/2023 13:55

Instrument: NT17 Analyst: VTS

Analyzed: 06/14/2023 16:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLF0094
Prepared: 06/07/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23F0084-03 E 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	1.1	ug/L	



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Project Manager: Ali Cochrane

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MW-10-053123
23F0084-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/31/2023 13:55

Instrument: NT17 Analyst: VTS

Analyzed: 06/14/2023 16:37

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U

Surrogate: 2-Fluorophenol

30-160 % 40.1 %

Surrogate: Phenol-d5

30-160 % 25.1 % *

Surrogate: 2-Chlorophenol-d4

30-160 % 65.4 %

Surrogate: 1,2-Dichlorobenzene-d4

30-160 % 54.3 %



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MW-10-053123
23F0084-03 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E Sampled: 05/31/2023 13:55
Instrument: NT17 Analyst: VTS Analyzed: 06/14/2023 16:37

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	83.9	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	75.8	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	124	%	Q
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	81.2	%	



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MW-10-053123
23F0084-03 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 05/31/2023 13:55

Instrument: NT18 Analyst: VTS

Analyzed: 06/20/2023 17:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLF0092
Prepared: 06/07/2023

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 23F0084-03 H 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.006	0.010	0.008	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.007	0.010	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.008	0.010	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.005	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.004	0.010	0.901	ug/L	
Dibenzofuran	132-64-9	1	0.006	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.004	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.005	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.005	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.005	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.006	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.008	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.006	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.008	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.008	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.005	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.017	0.020	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.005	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.004	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.008	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.008	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.009	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 53.2 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 22.0 % *

Surrogate: Fluoranthene-d10

57-120 % 60.6 %



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MW-10-053123
23F0084-03 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/31/2023 13:55
Instrument: FID4 Analyst: AA Analyzed: 06/13/2023 15:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23F0084-03 F 01
Preparation Batch: BLF0090 Sample Size: 500 mL
Prepared: 06/07/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	93.4	%	



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MW-10-053123
23F0084-03 (Water)

Aroclor PCB

Method: EPA 8082A

Sampled: 05/31/2023 13:55

Instrument: ECD7 Analyst: RJL

Analyzed: 06/20/2023 16:43

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLF0093 Prepared: 06/07/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23F0084-03 D 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLF0159 Cleaned: 16-Jun-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23F0084-03 D 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLF0157 Cleaned: 16-Jun-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23F0084-03 D 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLF0158 Cleaned: 16-Jun-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23F0084-03 D 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U
<i>Surrogate: Decachlorobiphenyl</i>					29-120 %	49.3	%
<i>Surrogate: Tetrachlorometaxylene</i>					32-120 %	54.7	%
<i>Surrogate: Decachlorobiphenyl [2C]</i>					29-120 %	48.5	%
<i>Surrogate: Tetrachlorometaxylene [2C]</i>					32-120 %	57.1	%



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MW-10-053123
23F0084-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B

Sampled: 05/31/2023 13:55

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/15/2023 00:36

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23F0084-03 A 01

Preparation Batch: BLF0380

Sample Size: 25 mL

Prepared: 06/13/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	2	0.520	1.00	0.744	ug/L	J, D
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-10-053123
23F0084-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/31/2023 13:55
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/15/2023 00:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0084-03 A 01
Preparation Batch: BLF0380 Sample Size: 25 mL
Prepared: 06/13/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.27	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.215	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.471	ug/L	J
Selenium	7782-49-2	2	0.358	1.00	3.01	ug/L	D
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-10-053123
23F0084-03 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/31/2023 13:55
Instrument: HYDRA Analyst: ML Analyzed: 06/12/2023 11:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23F0084-03 A
Preparation Batch: BLF0224 Sample Size: 20 mL
Prepared: 06/08/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-10-053123
23F0084-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B

Sampled: 05/31/2023 13:55

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/14/2023 23:37

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23F0084-04 A 01

Preparation Batch: BLF0385

Sample Size: 25 mL

Prepared: 06/13/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	2	0.520	1.00	0.738	ug/L	J, D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-10-053123
23F0084-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/31/2023 13:55
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/14/2023 23:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0084-04 A 01
Preparation Batch: BLF0385 Sample Size: 25 mL
Prepared: 06/13/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.13	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	0.342	ug/L	J
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.426	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	1.58	ug/L	
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-10-053123
23F0084-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/31/2023 13:55
Instrument: HYDRA Analyst: ML Analyzed: 06/12/2023 11:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23F0084-04 A
Preparation Batch: BLF0223 Sample Size: 20 mL
Prepared: 06/08/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-11-053123
23F0084-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 11:20

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 13:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLF0179
Prepared: 06/07/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 23F0084-05 X

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.23	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.05	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	1.91	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.15	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.06	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.04	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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MW-11-053123
23F0084-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 11:20

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 13:39

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.03	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.05	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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MW-11-053123
23F0084-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 11:20

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 13:39

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	102	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	93.6	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	105	%	



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MW-11-053123
23F0084-05 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/31/2023 11:20
Instrument: NT3 Analyst: PKC Analyzed: 06/07/2023 13:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23F0084-05 X
Preparation Batch: BLF0179 Sample Size: 10 mL
Prepared: 06/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	93.6	%	



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MW-11-053123
23F0084-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/31/2023 11:20

Instrument: NT17 Analyst: VTS

Analyzed: 06/14/2023 17:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLF0094
Prepared: 06/07/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23F0084-05 C 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-11-053123
23F0084-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/31/2023 11:20

Instrument: NT17 Analyst: VTS

Analyzed: 06/14/2023 17:15

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U
<i>Surrogate: 2-Fluorophenol</i>					30-160 %	39.9 %	
<i>Surrogate: Phenol-d5</i>					30-160 %	24.1 %	*
<i>Surrogate: 2-Chlorophenol-d4</i>					30-160 %	64.6 %	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>					30-160 %	56.4 %	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-11-053123
23F0084-05 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/31/2023 11:20

Instrument: NT17 Analyst: VTS

Analyzed: 06/14/2023 17:15

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	80.8	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	75.7	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	121	%	Q
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	82.6	%	



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Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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MW-11-053123
23F0084-05 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 05/31/2023 11:20

Instrument: NT18 Analyst: VTS

Analyzed: 06/20/2023 17:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLF0092
Prepared: 06/07/2023

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 23F0084-05 N 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.006	0.010	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.007	0.010	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.008	0.010	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.005	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.004	0.010	0.006	ug/L	J
Dibenzofuran	132-64-9	1	0.006	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.004	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.005	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.005	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.005	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.006	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.008	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.006	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.008	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.008	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.005	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.017	0.020	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.005	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.004	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.008	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.008	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.009	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 53.1 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 20.6 % *

Surrogate: Fluoranthene-d10

57-120 % 62.3 %



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MW-11-053123
23F0084-05 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/31/2023 11:20
Instrument: FID4 Analyst: AA Analyzed: 06/13/2023 16:05

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23F0084-05 K 01
Preparation Batch: BLF0090 Sample Size: 500 mL
Prepared: 06/07/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	91.2	%	



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MW-11-053123
23F0084-05 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 05/31/2023 11:20
Instrument: ECD7 Analyst: RJL Analyzed: 06/20/2023 17:04

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLF0093 Prepared: 06/07/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23F0084-05 G 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLF0159 Cleaned: 16-Jun-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23F0084-05 G 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLF0157 Cleaned: 16-Jun-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23F0084-05 G 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLF0158 Cleaned: 16-Jun-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23F0084-05 G 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	49.4 %
Surrogate: Tetrachlorometaxylene	32-120 %	53.8 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	49.1 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	56.7 %



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MW-11-053123
23F0084-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/31/2023 11:20
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/14/2023 23:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0084-05 A 01
Preparation Batch: BLF0380 Sample Size: 25 mL
Prepared: 06/13/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	0.0220	ug/L	J
Chromium	7440-47-3	5	1.30	2.50	1.67	ug/L	J, D
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-11-053123
23F0084-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/31/2023 11:20
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/14/2023 23:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0084-05 A 01
Preparation Batch: BLF0380 Sample Size: 25 mL
Prepared: 06/13/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.20	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.301	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.332	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	0.617	ug/L	
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-11-053123
23F0084-05 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/31/2023 11:20
Instrument: HYDRA Analyst: ML Analyzed: 06/12/2023 11:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23F0084-05 A
Preparation Batch: BLF0224 Sample Size: 20 mL
Prepared: 06/08/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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MW-11-053123
23F0084-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B

Sampled: 05/31/2023 11:20

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/14/2023 22:55

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23F0084-06 A 01

Preparation Batch: BLF0385

Sample Size: 25 mL

Prepared: 06/13/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	0.0240	ug/L	J
Chromium, Dissolved	7440-47-3	2	0.520	1.00	1.14	ug/L	D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-11-053123
23F0084-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/31/2023 11:20
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/14/2023 22:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0084-06 A 01
Preparation Batch: BLF0385 Sample Size: 25 mL
Prepared: 06/13/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.11	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.257	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	0.498	ug/L	J
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-11-053123
23F0084-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/31/2023 11:20
Instrument: HYDRA Analyst: ML Analyzed: 06/12/2023 10:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23F0084-06 B
Preparation Batch: BLF0223 Sample Size: 20 mL
Prepared: 06/08/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-15-053123
23F0084-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 09:00

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 14:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLF0179
Prepared: 06/07/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 23F0084-07 L

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.23	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.05	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	1.91	5.00	2.04	ug/L	J
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.15	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.06	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.04	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-15-053123
23F0084-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 09:00

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 14:01

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	0.16	ug/L	J
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	0.23	ug/L	J
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.03	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.05	0.20	0.06	ug/L	J
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-15-053123
23F0084-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 09:00

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 14:01

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	95.9	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	95.2	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	107	%	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 24-Jun-2023 11:52
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MW-15-053123
23F0084-07 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/31/2023 09:00
Instrument: NT3 Analyst: PKC Analyzed: 06/07/2023 14:01

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23F0084-07 L
Preparation Batch: BLF0179 Sample Size: 10 mL
Prepared: 06/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	101	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	95.2	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-15-053123
23F0084-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/31/2023 09:00

Instrument: NT17 Analyst: VTS

Analyzed: 06/14/2023 17:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLF0094
Prepared: 06/07/2023

Sample Size: 1000 mL
Final Volume: 1 mL

Extract ID: 23F0084-07 E 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Phenol	108-95-2	1	0.01	0.2	ND	ug/L	U
bis(2-chloroethyl) ether	111-44-4	1	0.03	0.2	ND	ug/L	U
2-Chlorophenol	95-57-8	1	0.03	0.2	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.03	0.2	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.03	0.2	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.03	0.2	ND	ug/L	U
Benzyl Alcohol	100-51-6	1	0.02	0.2	ND	ug/L	U
2,2'-Oxybis(1-chloropropane)	108-60-1	1	0.03	0.2	ND	ug/L	U
2-Methylphenol	95-48-7	1	0.03	0.2	ND	ug/L	U
Hexachloroethane	67-72-1	1	0.04	0.2	ND	ug/L	U
N-Nitroso-di-n-Propylamine	621-64-7	1	0.04	0.2	ND	ug/L	U
4-Methylphenol	106-44-5	1	0.03	0.2	ND	ug/L	U
Nitrobenzene	98-95-3	1	0.03	0.2	ND	ug/L	U
Isophorone	78-59-1	1	0.03	0.2	ND	ug/L	U
2-Nitrophenol	88-75-5	1	0.04	1.0	ND	ug/L	U
2,4-Dimethylphenol	105-67-9	1	0.3	1.0	ND	ug/L	U
Bis(2-Chloroethoxy)methane	111-91-1	1	0.03	0.2	ND	ug/L	U
2,4-Dichlorophenol	120-83-2	1	0.1	1.0	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.03	0.2	ND	ug/L	U
Naphthalene	91-20-3	1	0.03	0.2	ND	ug/L	U
Benzoic acid	65-85-0	1	0.1	2.0	ND	ug/L	U
4-Chloroaniline	106-47-8	1	0.04	1.0	ND	ug/L	U
Hexachlorobutadiene	87-68-3	1	0.04	0.2	ND	ug/L	U
4-Chloro-3-Methylphenol	59-50-7	1	0.1	1.0	ND	ug/L	U
2-Methylnaphthalene	91-57-6	1	0.03	0.2	ND	ug/L	U
Hexachlorocyclopentadiene	77-47-4	1	0.1	1.0	ND	ug/L	U
2,4,6-Trichlorophenol	88-06-2	1	0.2	1.0	ND	ug/L	U
2,4,5-Trichlorophenol	95-95-4	1	0.1	1.0	ND	ug/L	U
2-Chloronaphthalene	91-58-7	1	0.03	0.2	ND	ug/L	U
2-Nitroaniline	88-74-4	1	0.2	1.0	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.02	0.2	ND	ug/L	U
Dimethylphthalate	131-11-3	1	0.04	0.2	ND	ug/L	U
2,6-Dinitrotoluene	606-20-2	1	0.2	1.0	ND	ug/L	U
Acenaphthene	83-32-9	1	0.03	0.2	1.0	ug/L	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-15-053123
23F0084-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/31/2023 09:00

Instrument: NT17 Analyst: VTS

Analyzed: 06/14/2023 17:53

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
3-Nitroaniline	99-09-2	1	0.2	1.0	ND	ug/L	U
2,4-Dinitrophenol	51-28-5	1	0.2	2.0	ND	ug/L	U
Dibenzofuran	132-64-9	1	0.02	0.2	ND	ug/L	U
4-Nitrophenol	100-02-7	1	0.06	1.0	ND	ug/L	U
2,4-Dinitrotoluene	121-14-2	1	0.1	1.0	ND	ug/L	U
Fluorene	86-73-7	1	0.02	0.2	ND	ug/L	U
4-Chlorophenylphenyl ether	7005-72-3	1	0.02	0.2	ND	ug/L	U
Diethyl phthalate	84-66-2	1	0.06	0.2	ND	ug/L	U
4-Nitroaniline	100-01-6	1	0.2	1.0	ND	ug/L	U
4,6-Dinitro-2-methylphenol	534-52-1	1	0.4	2.0	ND	ug/L	U
N-Nitrosodiphenylamine	86-30-6	1	0.03	0.2	ND	ug/L	U
4-Bromophenyl phenyl ether	101-55-3	1	0.02	0.2	ND	ug/L	U
Hexachlorobenzene	118-74-1	1	0.04	0.2	ND	ug/L	U
Pentachlorophenol	87-86-5	1	0.1	1.0	ND	ug/L	U
Phenanthrene	85-01-8	1	0.02	0.2	ND	ug/L	U
Anthracene	120-12-7	1	0.03	0.2	ND	ug/L	U
Carbazole	86-74-8	1	0.04	0.2	ND	ug/L	U
Di-n-Butylphthalate	84-74-2	1	0.05	0.2	ND	ug/L	U
Fluoranthene	206-44-0	1	0.03	0.2	ND	ug/L	U
Pyrene	129-00-0	1	0.03	0.2	ND	ug/L	U
Butylbenzylphthalate	85-68-7	1	0.07	0.2	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.04	0.2	ND	ug/L	U
3,3'-Dichlorobenzidine	91-94-1	1	0.3	1.0	ND	ug/L	U
Chrysene	218-01-9	1	0.04	0.2	ND	ug/L	U
bis(2-Ethylhexyl)phthalate	117-81-7	1	0.2	0.2	ND	ug/L	U
Di-n-Octylphthalate	117-84-0	1	0.05	0.2	ND	ug/L	U
Benzo(a)fluoranthene, Total		1	0.08	0.4	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.05	0.2	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.06	0.2	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.07	0.2	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.04	0.2	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.03	0.2	ND	ug/L	U

Surrogate: 2-Fluorophenol

30-160 % 40.9 %

Surrogate: Phenol-d5

30-160 % 25.7 %

Surrogate: 2-Chlorophenol-d4

30-160 % 66.2 %

Surrogate: 1,2-Dichlorobenzene-d4

30-160 % 54.9 %



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-15-053123
23F0084-07 (Water)

Semivolatile Organic Compounds

Method: EPA 8270E

Sampled: 05/31/2023 09:00

Instrument: NT17 Analyst: VTS

Analyzed: 06/14/2023 17:53

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Recovery		Units	Notes
		Limits	Recovery		
<i>Surrogate: Nitrobenzene-d5</i>		30-160 %	71.5	%	
<i>Surrogate: 2-Fluorobiphenyl</i>		30-160 %	69.0	%	
<i>Surrogate: 2,4,6-Tribromophenol</i>		30-160 %	110	%	Q
<i>Surrogate: p-Terphenyl-d14</i>		30-160 %	71.9	%	



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Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

MW-15-053123
23F0084-07 (Water)

Semivolatile Organic Compounds - SIM

Method: EPA 8270E-SIM

Sampled: 05/31/2023 09:00

Instrument: NT18 Analyst: VTS

Analyzed: 06/20/2023 19:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF
Preparation Batch: BLF0092
Prepared: 06/07/2023

Sample Size: 500 mL
Final Volume: 0.5 mL

Extract ID: 23F0084-07 H 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Naphthalene	91-20-3	1	0.006	0.010	0.008	ug/L	J
2-Methylnaphthalene	91-57-6	1	0.007	0.010	ND	ug/L	U
1-Methylnaphthalene	90-12-0	1	0.008	0.010	ND	ug/L	U
Acenaphthylene	208-96-8	1	0.005	0.010	ND	ug/L	U
Acenaphthene	83-32-9	1	0.004	0.010	0.947	ug/L	
Dibenzofuran	132-64-9	1	0.006	0.010	ND	ug/L	U
Fluorene	86-73-7	1	0.004	0.010	ND	ug/L	U
Phenanthrene	85-01-8	1	0.005	0.010	ND	ug/L	U
Anthracene	120-12-7	1	0.005	0.010	ND	ug/L	U
Carbazole	86-74-8	1	0.005	0.010	ND	ug/L	U
Fluoranthene	206-44-0	1	0.006	0.010	ND	ug/L	U
Pyrene	129-00-0	1	0.008	0.010	ND	ug/L	U
Benzo(a)anthracene	56-55-3	1	0.006	0.010	ND	ug/L	U
Chrysene	218-01-9	1	0.008	0.010	ND	ug/L	U
Benzo(b)fluoranthene	205-99-2	1	0.005	0.010	ND	ug/L	U
Benzo(k)fluoranthene	207-08-9	1	0.008	0.010	ND	ug/L	U
Benzo(j)fluoranthene	205-82-3	1	0.005	0.010	ND	ug/L	U
Benzofluoranthenes, Total		1	0.017	0.020	ND	ug/L	U
Benzo(a)pyrene	50-32-8	1	0.005	0.010	ND	ug/L	U
Perylene	198-55-0	1	0.004	0.010	ND	ug/L	U
Indeno(1,2,3-cd)pyrene	193-39-5	1	0.008	0.010	ND	ug/L	U
Dibenzo(a,h)anthracene	53-70-3	1	0.008	0.010	ND	ug/L	U
Benzo(g,h,i)perylene	191-24-2	1	0.009	0.010	ND	ug/L	U

Surrogate: 2-Methylnaphthalene-d10

42-120 % 55.3 %

Surrogate: Dibenzo[a,h]anthracene-d14

29-120 % 21.6 % *

Surrogate: Fluoranthene-d10

57-120 % 59.1 %



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MW-15-053123
23F0084-07 (Water)

Petroleum Hydrocarbons

Method: NWTPH-Dx Sampled: 05/31/2023 09:00
Instrument: FID4 Analyst: AA Analyzed: 06/13/2023 16:25

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 3510C SepF Extract ID: 23F0084-07 F 01
Preparation Batch: BLF0090 Sample Size: 500 mL
Prepared: 06/07/2023 Final Volume: 1 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Diesel Range Organics (C12-C24)	DRO	1	0.100	ND	mg/L	U
Motor Oil Range Organics (C24-C38)	RRO	1	0.200	ND	mg/L	U
<i>Surrogate: o-Terphenyl</i>			50-150 %	92.4	%	



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MW-15-053123
23F0084-07 (Water)

Aroclor PCB

Method: EPA 8082A Sampled: 05/31/2023 09:00
Instrument: ECD7 Analyst: RJL Analyzed: 06/20/2023 18:07

Analysis by: Analytical Resources, LLC

Sample Preparation:	Preparation Method: EPA 3510C SepF Preparation Batch: BLF0093 Prepared: 06/07/2023	Sample Size: 1000 mL Final Volume: 0.5 mL	Extract ID: 23F0084-07 D 01
Sample Cleanup:	Cleanup Method: Silica Gel Cleanup Batch: CLF0159 Cleaned: 16-Jun-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23F0084-07 D 01
Sample Cleanup:	Cleanup Method: Sulfuric Acid Cleanup Batch: CLF0157 Cleaned: 16-Jun-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23F0084-07 D 01
Sample Cleanup:	Cleanup Method: Sulfur Cleanup Batch: CLF0158 Cleaned: 16-Jun-2023	Initial Volume: 0.5 uL Final Volume: 0.5 uL	Extract ID: 23F0084-07 D 01

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Aroclor 1016	12674-11-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1221	11104-28-2	1	0.002	0.010	ND	ug/L	U
Aroclor 1232	11141-16-5	1	0.002	0.010	ND	ug/L	U
Aroclor 1242	53469-21-9	1	0.002	0.010	ND	ug/L	U
Aroclor 1248	12672-29-6	1	0.002	0.010	ND	ug/L	U
Aroclor 1254	11097-69-1	1	0.002	0.010	ND	ug/L	U
Aroclor 1260	11096-82-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1262	37324-23-5	1	0.003	0.010	ND	ug/L	U
Aroclor 1268	11100-14-4	1	0.003	0.010	ND	ug/L	U

Surrogate: Decachlorobiphenyl	29-120 %	52.0 %
Surrogate: Tetrachlorometaxylene	32-120 %	61.1 %
Surrogate: Decachlorobiphenyl [2C]	29-120 %	51.4 %
Surrogate: Tetrachlorometaxylene [2C]	32-120 %	60.8 %



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 24-Jun-2023 11:52
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MW-15-053123
23F0084-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/31/2023 09:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/15/2023 00:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0084-07 A 01
Preparation Batch: BLF0380 Sample Size: 25 mL
Prepared: 06/13/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium	7440-47-3	2	0.520	1.00	0.632	ug/L	J, D
Lead	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-15-053123
23F0084-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B UCT-KED Sampled: 05/31/2023 09:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/15/2023 00:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0084-07 A 01
Preparation Batch: BLF0380 Sample Size: 25 mL
Prepared: 06/13/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic	7440-38-2	1	0.0373	0.200	1.24	ug/L	
Cadmium	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper	7440-50-8	1	0.173	0.500	0.213	ug/L	J
Nickel	7440-02-0	1	0.0792	0.500	0.416	ug/L	J
Selenium	7782-49-2	1	0.179	0.500	1.77	ug/L	
Zinc	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-15-053123
23F0084-07 (Water)

Metals and Metallic Compounds

Method: EPA 7470A Sampled: 05/31/2023 09:00
Instrument: HYDRA Analyst: ML Analyzed: 06/12/2023 11:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23F0084-07 A
Preparation Batch: BLF0224 Sample Size: 20 mL
Prepared: 06/08/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project Manager: Ali Cochrane

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MW-15-053123
23F0084-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B

Sampled: 05/31/2023 09:00

Instrument: ICPMS2 Analyst: MCB

Analyzed: 06/14/2023 23:43

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: REN - EPA 3010A M

Extract ID: 23F0084-08 A 01

Preparation Batch: BLF0385

Sample Size: 25 mL

Prepared: 06/13/2023

Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Antimony, Dissolved	7440-36-0	1	0.101	0.200	ND	ug/L	U
Beryllium, Dissolved	7440-41-7	1	0.0171	0.200	ND	ug/L	U
Chromium, Dissolved	7440-47-3	2	0.520	1.00	0.674	ug/L	J, D
Lead, Dissolved	7439-92-1	1	0.0513	0.100	ND	ug/L	U
Silver, Dissolved	7440-22-4	1	0.0220	0.200	ND	ug/L	U
Thallium, Dissolved	7440-28-0	1	0.0234	0.200	ND	ug/L	U



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MW-15-053123
23F0084-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 05/31/2023 09:00
Instrument: ICPMS2 Analyst: MCB Analyzed: 06/14/2023 23:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23F0084-08 A 01
Preparation Batch: BLF0385 Sample Size: 25 mL
Prepared: 06/13/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Detection	Reporting	Result	Units	Notes
			Limit	Limit			
Arsenic, Dissolved	7440-38-2	1	0.0373	0.200	1.13	ug/L	
Cadmium, Dissolved	7440-43-9	1	0.0300	0.100	ND	ug/L	U
Copper, Dissolved	7440-50-8	1	0.173	0.500	ND	ug/L	U
Nickel, Dissolved	7440-02-0	1	0.0792	0.500	0.383	ug/L	J
Selenium, Dissolved	7782-49-2	1	0.179	0.500	1.35	ug/L	
Zinc, Dissolved	7440-66-6	1	2.92	6.00	ND	ug/L	U



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MW-15-053123
23F0084-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 7470A Sampled: 05/31/2023 09:00
Instrument: HYDRA Analyst: ML Analyzed: 06/12/2023 11:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: TWM EPA 7470A Extract ID: 23F0084-08 A
Preparation Batch: BLF0223 Sample Size: 20 mL
Prepared: 06/08/2023 Final Volume: 20 mL

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Mercury, Dissolved	7439-97-6	1	0.000013	0.000100	ND	mg/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

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TB
23F0084-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 09:00

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 12:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLF0179
Prepared: 06/07/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 23F0084-09 B

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Chloromethane	74-87-3	1	0.27	0.50	ND	ug/L	U
Vinyl Chloride	75-01-4	1	0.08	0.20	ND	ug/L	U
Bromomethane	74-83-9	1	0.23	1.00	ND	ug/L	U
Chloroethane	75-00-3	1	0.05	0.20	ND	ug/L	U
Trichlorofluoromethane	75-69-4	1	0.13	0.20	ND	ug/L	U
Acrolein	107-02-8	1	2.70	5.00	ND	ug/L	U
1,1,2-Trichloro-1,2,2-Trifluoroethane	76-13-1	1	0.11	0.20	ND	ug/L	U
Acetone	67-64-1	1	1.91	5.00	ND	ug/L	U
1,1-Dichloroethene	75-35-4	1	0.08	0.20	ND	ug/L	U
Iodomethane	74-88-4	1	0.15	1.00	ND	ug/L	U
Methylene Chloride	75-09-2	1	0.53	1.00	ND	ug/L	U
Acrylonitrile	107-13-1	1	0.40	1.00	ND	ug/L	U
Carbon Disulfide	75-15-0	1	0.06	0.20	ND	ug/L	U
trans-1,2-Dichloroethene	156-60-5	1	0.07	0.20	ND	ug/L	U
Vinyl Acetate	108-05-4	1	0.12	0.20	ND	ug/L	U
1,1-Dichloroethane	75-34-3	1	0.04	0.20	ND	ug/L	U
2-Butanone	78-93-3	1	1.77	5.00	ND	ug/L	U
2,2-Dichloropropane	594-20-7	1	0.11	0.20	ND	ug/L	U
cis-1,2-Dichloroethene	156-59-2	1	0.08	0.20	ND	ug/L	U
Chloroform	67-66-3	1	0.05	0.20	ND	ug/L	U
Bromochloromethane	74-97-5	1	0.09	0.20	ND	ug/L	U
1,1,1-Trichloroethane	71-55-6	1	0.08	0.20	ND	ug/L	U
1,1-Dichloropropene	563-58-6	1	0.09	0.20	ND	ug/L	U
Carbon tetrachloride	56-23-5	1	0.09	0.20	ND	ug/L	U
1,2-Dichloroethane	107-06-2	1	0.08	0.20	ND	ug/L	U
Benzene	71-43-2	1	0.05	0.20	ND	ug/L	U
Trichloroethene	79-01-6	1	0.07	0.20	ND	ug/L	U
1,2-Dichloropropane	78-87-5	1	0.07	0.20	ND	ug/L	U
Bromodichloromethane	75-27-4	1	0.09	0.20	ND	ug/L	U
Dibromomethane	74-95-3	1	0.06	0.20	ND	ug/L	U
2-Chloroethyl vinyl ether	110-75-8	1	0.55	1.00	ND	ug/L	U
4-Methyl-2-Pentanone	108-10-1	1	1.90	5.00	ND	ug/L	U
cis-1,3-Dichloropropene	10061-01-5	1	0.09	0.20	ND	ug/L	U
Toluene	108-88-3	1	0.05	0.20	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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TB
23F0084-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 09:00

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 12:33

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
trans-1,3-Dichloropropene	10061-02-6	1	0.09	0.20	ND	ug/L	U
2-Hexanone	591-78-6	1	2.06	5.00	ND	ug/L	U
1,1,2-Trichloroethane	79-00-5	1	0.10	0.20	ND	ug/L	U
1,3-Dichloropropane	142-28-9	1	0.07	0.20	ND	ug/L	U
Tetrachloroethene	127-18-4	1	0.09	0.20	ND	ug/L	U
Dibromochloromethane	124-48-1	1	0.09	0.20	ND	ug/L	U
1,2-Dibromoethane	106-93-4	1	0.09	0.20	ND	ug/L	U
Chlorobenzene	108-90-7	1	0.06	0.20	ND	ug/L	U
Ethylbenzene	100-41-4	1	0.05	0.20	ND	ug/L	U
1,1,1,2-Tetrachloroethane	630-20-6	1	0.09	0.20	ND	ug/L	U
m,p-Xylene	179601-23-1	1	0.14	0.40	ND	ug/L	U
o-Xylene	95-47-6	1	0.08	0.20	ND	ug/L	U
Xylenes, total	1330-20-7	1	0.22	0.60	ND	ug/L	U
Styrene	100-42-5	1	0.09	0.20	ND	ug/L	U
Bromoform	75-25-2	1	0.15	0.20	ND	ug/L	U
1,1,2,2-Tetrachloroethane	79-34-5	1	0.03	0.20	ND	ug/L	U
1,2,3-Trichloropropane	96-18-4	1	0.16	0.50	ND	ug/L	U
trans-1,4-Dichloro 2-Butene	110-57-6	1	0.60	1.00	ND	ug/L	U
n-Propylbenzene	103-65-1	1	0.07	0.20	ND	ug/L	U
Bromobenzene	108-86-1	1	0.07	0.20	ND	ug/L	U
Isopropyl Benzene	98-82-8	1	0.07	0.20	ND	ug/L	U
2-Chlorotoluene	95-49-8	1	0.06	0.20	ND	ug/L	U
4-Chlorotoluene	106-43-4	1	0.06	0.20	ND	ug/L	U
t-Butylbenzene	98-06-6	1	0.07	0.20	ND	ug/L	U
1,3,5-Trimethylbenzene	108-67-8	1	0.07	0.20	ND	ug/L	U
1,2,4-Trimethylbenzene	95-63-6	1	0.05	0.20	ND	ug/L	U
s-Butylbenzene	135-98-8	1	0.06	0.20	ND	ug/L	U
4-Isopropyl Toluene	99-87-6	1	0.08	0.20	ND	ug/L	U
1,3-Dichlorobenzene	541-73-1	1	0.08	0.20	ND	ug/L	U
1,4-Dichlorobenzene	106-46-7	1	0.10	0.20	ND	ug/L	U
n-Butylbenzene	104-51-8	1	0.18	0.20	ND	ug/L	U
1,2-Dichlorobenzene	95-50-1	1	0.08	0.20	ND	ug/L	U
1,2-Dibromo-3-chloropropane	96-12-8	1	0.39	0.50	ND	ug/L	U
1,2,4-Trichlorobenzene	120-82-1	1	0.21	0.50	ND	ug/L	U
Hexachloro-1,3-Butadiene	87-68-3	1	1.00	2.00	ND	ug/L	U
Naphthalene	91-20-3	1	0.27	0.50	ND	ug/L	U
1,2,3-Trichlorobenzene	87-61-6	1	0.25	0.50	ND	ug/L	U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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TB
23F0084-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/31/2023 09:00

Instrument: NT3 Analyst: PKC

Analyzed: 06/07/2023 12:33

Analysis by: Analytical Resources, LLC

Analyte	CAS Number	Dilution	Detection Limit	Reporting Limit	Result	Units	Notes
Dichlorodifluoromethane	75-71-8	1	0.13	0.20	ND	ug/L	U
Methyl tert-butyl Ether	1634-04-4	1	0.14	0.50	ND	ug/L	U
2-Pentanone	107-87-9	1	2.34	5.00	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>				80-129 %	96.8	%	
<i>Surrogate: Toluene-d8</i>				80-120 %	99.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>				80-120 %	92.6	%	
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>				80-120 %	103	%	



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TB
23F0084-09 (Water)

Volatile Organic Compounds

Method: NWTPHg Sampled: 05/31/2023 09:00
Instrument: NT3 Analyst: PKC Analyzed: 06/07/2023 12:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23F0084-09 B
Preparation Batch: BLF0179 Sample Size: 10 mL
Prepared: 06/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Gasoline Range Organics (Tol-Nap)	GRO	1	100	ND	ug/L	U
<i>Surrogate: Toluene-d8</i>			80-120 %	99.1	%	
<i>Surrogate: 4-Bromofluorobenzene</i>			80-120 %	92.6	%	



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - NWTPHg

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0179-BLK1)										
					Prepared: 07-Jun-2023		Analyzed: 07-Jun-2023 12:11			
Gasoline Range Organics (Tol-Nap)	ND	100	ug/L							U
Surrogate: Toluene-d8	4.96		ug/L	5.00	99.2		80-120			
Surrogate: 4-Bromofluorobenzene	4.79		ug/L	5.00	95.9		80-120			

Blank (BLF0179-BLK2)										
					Prepared: 07-Jun-2023		Analyzed: 07-Jun-2023 12:11			
Chloromethane	ND	0.27	0.50	ug/L						U
Vinyl Chloride	ND	0.08	0.20	ug/L						U
Bromomethane	ND	0.23	1.00	ug/L						U
Chloroethane	ND	0.05	0.20	ug/L						U
Trichlorofluoromethane	ND	0.13	0.20	ug/L						U
Acrolein	ND	2.70	5.00	ug/L						U
1,1,2-Trichloro-1,2,2-Trifluoroethane	ND	0.11	0.20	ug/L						U
Acetone	ND	1.91	5.00	ug/L						U
1,1-Dichloroethene	ND	0.08	0.20	ug/L						U
Iodomethane	ND	0.15	1.00	ug/L						U
Methylene Chloride	ND	0.53	1.00	ug/L						U
Acrylonitrile	ND	0.40	1.00	ug/L						U
Carbon Disulfide	ND	0.06	0.20	ug/L						U
trans-1,2-Dichloroethene	ND	0.07	0.20	ug/L						U
Vinyl Acetate	ND	0.12	0.20	ug/L						U
1,1-Dichloroethane	ND	0.04	0.20	ug/L						U
2-Butanone	ND	1.77	5.00	ug/L						U
2,2-Dichloropropane	ND	0.11	0.20	ug/L						U
cis-1,2-Dichloroethene	ND	0.08	0.20	ug/L						U
Chloroform	ND	0.05	0.20	ug/L						U
Bromochloromethane	ND	0.09	0.20	ug/L						U
1,1,1-Trichloroethane	ND	0.08	0.20	ug/L						U
1,1-Dichloropropene	ND	0.09	0.20	ug/L						U
Carbon tetrachloride	ND	0.09	0.20	ug/L						U
1,2-Dichloroethane	ND	0.08	0.20	ug/L						U
Benzene	ND	0.05	0.20	ug/L						U
Trichloroethene	ND	0.07	0.20	ug/L						U
1,2-Dichloropropane	ND	0.07	0.20	ug/L						U
Bromodichloromethane	ND	0.09	0.20	ug/L						U
Dibromomethane	ND	0.06	0.20	ug/L						U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0179-BLK2) Prepared: 07-Jun-2023 Analyzed: 07-Jun-2023 12:11											
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L							U
4-Methyl-2-Pentanone	ND	1.90	5.00	ug/L							U
cis-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U
Toluene	ND	0.05	0.20	ug/L							U
trans-1,3-Dichloropropene	ND	0.09	0.20	ug/L							U
2-Hexanone	ND	2.06	5.00	ug/L							U
1,1,2-Trichloroethane	ND	0.10	0.20	ug/L							U
1,3-Dichloropropane	ND	0.07	0.20	ug/L							U
Tetrachloroethene	ND	0.09	0.20	ug/L							U
Dibromochloromethane	ND	0.09	0.20	ug/L							U
1,2-Dibromoethane	ND	0.09	0.20	ug/L							U
Chlorobenzene	ND	0.06	0.20	ug/L							U
Ethylbenzene	ND	0.05	0.20	ug/L							U
1,1,1,2-Tetrachloroethane	ND	0.09	0.20	ug/L							U
m,p-Xylene	ND	0.14	0.40	ug/L							U
o-Xylene	ND	0.08	0.20	ug/L							U
Xylenes, total	ND	0.22	0.60	ug/L							U
Styrene	ND	0.09	0.20	ug/L							U
Bromoform	ND	0.15	0.20	ug/L							U
1,1,2,2-Tetrachloroethane	ND	0.03	0.20	ug/L							U
1,2,3-Trichloropropane	ND	0.16	0.50	ug/L							U
trans-1,4-Dichloro 2-Butene	ND	0.60	1.00	ug/L							U
n-Propylbenzene	ND	0.07	0.20	ug/L							U
Bromobenzene	ND	0.07	0.20	ug/L							U
Isopropyl Benzene	ND	0.07	0.20	ug/L							U
2-Chlorotoluene	ND	0.06	0.20	ug/L							U
4-Chlorotoluene	ND	0.06	0.20	ug/L							U
t-Butylbenzene	ND	0.07	0.20	ug/L							U
1,3,5-Trimethylbenzene	ND	0.07	0.20	ug/L							U
1,2,4-Trimethylbenzene	ND	0.05	0.20	ug/L							U
s-Butylbenzene	ND	0.06	0.20	ug/L							U
4-Isopropyl Toluene	ND	0.08	0.20	ug/L							U
1,3-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,4-Dichlorobenzene	ND	0.10	0.20	ug/L							U
n-Butylbenzene	ND	0.18	0.20	ug/L							U



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0179-BLK2)											
						Prepared: 07-Jun-2023 Analyzed: 07-Jun-2023 12:11					
1,2-Dichlorobenzene	ND	0.08	0.20	ug/L							U
1,2-Dibromo-3-chloropropane	ND	0.39	0.50	ug/L							U
1,2,4-Trichlorobenzene	ND	0.21	0.50	ug/L							U
Hexachloro-1,3-Butadiene	ND	1.00	2.00	ug/L							U
Naphthalene	ND	0.27	0.50	ug/L							U
1,2,3-Trichlorobenzene	ND	0.25	0.50	ug/L							U
Dichlorodifluoromethane	ND	0.13	0.20	ug/L							U
Methyl tert-butyl Ether	ND	0.14	0.50	ug/L							U
2-Pentanone	ND	2.34	5.00	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.64			ug/L	5.00		92.7	80-129			
<i>Surrogate: Toluene-d8</i>	4.96			ug/L	5.00		99.2	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.79			ug/L	5.00		95.9	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.03			ug/L	5.00		101	80-120			
LCS (BLF0179-BS1)											
						Prepared: 07-Jun-2023 Analyzed: 07-Jun-2023 10:20					
Gasoline Range Organics (Tol-Nap)	1000		100	ug/L	1000		100	72-128			
<i>Surrogate: Toluene-d8</i>	5.02			ug/L	5.00		100	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.89			ug/L	5.00		97.7	80-120			
LCS (BLF0179-BS2)											
						Prepared: 07-Jun-2023 Analyzed: 07-Jun-2023 10:42					
Chloromethane	8.32	0.27	0.50	ug/L	10.0		83.2	60-138			
Vinyl Chloride	8.40	0.08	0.20	ug/L	10.0		84.0	66-133			
Bromomethane	10.1	0.23	1.00	ug/L	10.0		101	72-131			
Chloroethane	10.3	0.05	0.20	ug/L	10.0		103	60-155			
Trichlorofluoromethane	9.41	0.13	0.20	ug/L	10.0		94.1	62-141			
Acrolein	48.7	2.70	5.00	ug/L	50.0		97.3	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.45	0.11	0.20	ug/L	10.0		94.5	76-129			
Acetone	44.2	1.91	5.00	ug/L	50.0		88.4	58-142			
1,1-Dichloroethene	9.36	0.08	0.20	ug/L	10.0		93.6	69-135			
Iodomethane	10.1	0.15	1.00	ug/L	10.0		101	56-147			
Methylene Chloride	9.60	0.53	1.00	ug/L	10.0		96.0	65-135			
Acrylonitrile	9.02	0.40	1.00	ug/L	10.0		90.2	64-134			
Carbon Disulfide	9.57	0.06	0.20	ug/L	10.0		95.7	78-125			
trans-1,2-Dichloroethene	9.92	0.07	0.20	ug/L	10.0		99.2	78-128			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLF0179-BS2)						Prepared: 07-Jun-2023 Analyzed: 07-Jun-2023 10:42					
Vinyl Acetate	8.80	0.12	0.20	ug/L	10.0		88.0	55-138			
1,1-Dichloroethane	9.43	0.04	0.20	ug/L	10.0		94.3	76-124			
2-Butanone	45.1	1.77	5.00	ug/L	50.0		90.2	61-140			
2,2-Dichloropropane	8.90	0.11	0.20	ug/L	10.0		89.0	66-147			
cis-1,2-Dichloroethene	10.1	0.08	0.20	ug/L	10.0		101	80-121			
Chloroform	9.66	0.05	0.20	ug/L	10.0		96.6	80-122			
Bromochloromethane	9.97	0.09	0.20	ug/L	10.0		99.7	80-121			
1,1,1-Trichloroethane	9.07	0.08	0.20	ug/L	10.0		90.7	79-123			
1,1-Dichloropropene	9.40	0.09	0.20	ug/L	10.0		94.0	80-127			
Carbon tetrachloride	8.71	0.09	0.20	ug/L	10.0		87.1	53-137			
1,2-Dichloroethane	8.81	0.08	0.20	ug/L	10.0		88.1	75-123			
Benzene	10.0	0.05	0.20	ug/L	10.0		100	80-120			
Trichloroethene	9.88	0.07	0.20	ug/L	10.0		98.8	80-120			
1,2-Dichloropropane	9.68	0.07	0.20	ug/L	10.0		96.8	80-120			
Bromodichloromethane	8.87	0.09	0.20	ug/L	10.0		88.7	80-121			
Dibromomethane	9.25	0.06	0.20	ug/L	10.0		92.5	80-120			
2-Chloroethyl vinyl ether	9.66	0.55	1.00	ug/L	10.0		96.6	64-120			
4-Methyl-2-Pentanone	48.9	1.90	5.00	ug/L	50.0		97.7	67-133			
cis-1,3-Dichloropropene	9.65	0.09	0.20	ug/L	10.0		96.5	80-124			
Toluene	10.0	0.05	0.20	ug/L	10.0		100	80-120			
trans-1,3-Dichloropropene	9.50	0.09	0.20	ug/L	10.0		95.0	71-127			
2-Hexanone	44.7	2.06	5.00	ug/L	50.0		89.4	69-133			
1,1,2-Trichloroethane	10.1	0.10	0.20	ug/L	10.0		101	80-121			
1,3-Dichloropropane	9.57	0.07	0.20	ug/L	10.0		95.7	80-120			
Tetrachloroethene	9.81	0.09	0.20	ug/L	10.0		98.1	80-120			
Dibromochloromethane	8.36	0.09	0.20	ug/L	10.0		83.6	65-135			
1,2-Dibromoethane	9.96	0.09	0.20	ug/L	10.0		99.6	80-121			
Chlorobenzene	10.1	0.06	0.20	ug/L	10.0		101	80-120			
Ethylbenzene	9.92	0.05	0.20	ug/L	10.0		99.2	80-120			
1,1,1,2-Tetrachloroethane	9.05	0.09	0.20	ug/L	10.0		90.5	80-120			
m,p-Xylene	20.2	0.14	0.40	ug/L	20.0		101	80-121			
o-Xylene	9.88	0.08	0.20	ug/L	10.0		98.8	80-121			
Xylenes, total	30.1	0.22	0.60	ug/L	30.0		100	76-127			
Styrene	10.3	0.09	0.20	ug/L	10.0		103	80-124			
Bromoform	8.75	0.15	0.20	ug/L	10.0		87.5	51-134			



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Project Manager: Ali Cochrane

Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLF0179-BS2)						Prepared: 07-Jun-2023 Analyzed: 07-Jun-2023 10:42					
1,1,2,2-Tetrachloroethane	9.96	0.03	0.20	ug/L	10.0		99.6	77-123			
1,2,3-Trichloropropane	9.74	0.16	0.50	ug/L	10.0		97.4	76-125			
trans-1,4-Dichloro 2-Butene	8.27	0.60	1.00	ug/L	10.0		82.7	55-129			
n-Propylbenzene	10.1	0.07	0.20	ug/L	10.0		101	78-130			
Bromobenzene	9.93	0.07	0.20	ug/L	10.0		99.3	80-120			
Isopropyl Benzene	9.99	0.07	0.20	ug/L	10.0		99.9	80-128			
2-Chlorotoluene	9.92	0.06	0.20	ug/L	10.0		99.2	78-122			
4-Chlorotoluene	10.1	0.06	0.20	ug/L	10.0		101	80-121			
t-Butylbenzene	9.76	0.07	0.20	ug/L	10.0		97.6	78-125			
1,3,5-Trimethylbenzene	9.74	0.07	0.20	ug/L	10.0		97.4	80-129			
1,2,4-Trimethylbenzene	9.81	0.05	0.20	ug/L	10.0		98.1	80-127			
s-Butylbenzene	10.2	0.06	0.20	ug/L	10.0		102	78-129			
4-Isopropyl Toluene	10.1	0.08	0.20	ug/L	10.0		101	79-130			
1,3-Dichlorobenzene	9.97	0.08	0.20	ug/L	10.0		99.7	80-120			
1,4-Dichlorobenzene	10.1	0.10	0.20	ug/L	10.0		101	80-120			
n-Butylbenzene	10.0	0.18	0.20	ug/L	10.0		100	74-129			
1,2-Dichlorobenzene	9.95	0.08	0.20	ug/L	10.0		99.5	80-120			
1,2-Dibromo-3-chloropropane	7.97	0.39	0.50	ug/L	10.0		79.7	62-123			Q
1,2,4-Trichlorobenzene	10.1	0.21	0.50	ug/L	10.0		101	64-124			
Hexachloro-1,3-Butadiene	9.00	1.00	2.00	ug/L	10.0		90.0	65-145			
Naphthalene	9.99	0.27	0.50	ug/L	10.0		99.9	50-134			
1,2,3-Trichlorobenzene	9.87	0.25	0.50	ug/L	10.0		98.7	49-133			
Dichlorodifluoromethane	9.28	0.13	0.20	ug/L	10.0		92.8	48-147			
Methyl tert-butyl Ether	9.43	0.14	0.50	ug/L	10.0		94.3	71-132			
2-Pentanone	52.1	2.34	5.00	ug/L	50.0		104	69-134			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.89			ug/L	5.00		97.8	80-129			
<i>Surrogate: Toluene-d8</i>	5.03			ug/L	5.00		101	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.02			ug/L	5.00		100	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.30			ug/L	5.00		106	80-120			
LCS Dup (BLF0179-BS1)						Prepared: 07-Jun-2023 Analyzed: 07-Jun-2023 11:04					
Gasoline Range Organics (Tol-Nap)	1030		100	ug/L	1000		103	72-128	2.66	30	
<i>Surrogate: Toluene-d8</i>	4.99			ug/L	5.00		99.8	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.95			ug/L	5.00		99.0	80-120			



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLF0179-BSD2)						Prepared: 07-Jun-2023 Analyzed: 07-Jun-2023 11:26					
Chloromethane	8.66	0.27	0.50	ug/L	10.0		86.6	60-138	4.06	30	
Vinyl Chloride	8.88	0.08	0.20	ug/L	10.0		88.8	66-133	5.59	30	
Bromomethane	10.8	0.23	1.00	ug/L	10.0		108	72-131	7.00	30	
Chloroethane	10.9	0.05	0.20	ug/L	10.0		109	60-155	5.32	30	
Trichlorofluoromethane	9.99	0.13	0.20	ug/L	10.0		99.9	62-141	5.96	30	
Acrolein	51.4	2.70	5.00	ug/L	50.0		103	52-190	5.37	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.68	0.11	0.20	ug/L	10.0		96.8	76-129	2.44	30	
Acetone	46.4	1.91	5.00	ug/L	50.0		92.8	58-142	4.83	30	
1,1-Dichloroethene	9.61	0.08	0.20	ug/L	10.0		96.1	69-135	2.68	30	
Iodomethane	10.8	0.15	1.00	ug/L	10.0		108	56-147	6.79	30	
Methylene Chloride	10.4	0.53	1.00	ug/L	10.0		104	65-135	8.25	30	
Acrylonitrile	9.59	0.40	1.00	ug/L	10.0		95.9	64-134	6.14	30	
Carbon Disulfide	10.3	0.06	0.20	ug/L	10.0		103	78-125	7.49	30	
trans-1,2-Dichloroethene	10.5	0.07	0.20	ug/L	10.0		105	78-128	5.53	30	
Vinyl Acetate	9.57	0.12	0.20	ug/L	10.0		95.7	55-138	8.47	30	
1,1-Dichloroethane	9.92	0.04	0.20	ug/L	10.0		99.2	76-124	5.08	30	
2-Butanone	48.2	1.77	5.00	ug/L	50.0		96.4	61-140	6.61	30	
2,2-Dichloropropane	9.30	0.11	0.20	ug/L	10.0		93.0	66-147	4.45	30	
cis-1,2-Dichloroethene	10.8	0.08	0.20	ug/L	10.0		108	80-121	6.41	30	
Chloroform	10.1	0.05	0.20	ug/L	10.0		101	80-122	4.14	30	
Bromochloromethane	10.6	0.09	0.20	ug/L	10.0		106	80-121	6.31	30	
1,1,1-Trichloroethane	9.44	0.08	0.20	ug/L	10.0		94.4	79-123	3.98	30	
1,1-Dichloropropene	10.2	0.09	0.20	ug/L	10.0		102	80-127	8.01	30	
Carbon tetrachloride	9.03	0.09	0.20	ug/L	10.0		90.3	53-137	3.61	30	
1,2-Dichloroethane	9.51	0.08	0.20	ug/L	10.0		95.1	75-123	7.66	30	
Benzene	10.8	0.05	0.20	ug/L	10.0		108	80-120	7.14	30	
Trichloroethene	10.6	0.07	0.20	ug/L	10.0		106	80-120	6.56	30	
1,2-Dichloropropane	10.5	0.07	0.20	ug/L	10.0		105	80-120	7.61	30	
Bromodichloromethane	9.40	0.09	0.20	ug/L	10.0		94.0	80-121	5.79	30	
Dibromomethane	10.2	0.06	0.20	ug/L	10.0		102	80-120	10.10	30	
2-Chloroethyl vinyl ether	10.6	0.55	1.00	ug/L	10.0		106	64-120	8.88	30	
4-Methyl-2-Pentanone	53.2	1.90	5.00	ug/L	50.0		106	67-133	8.58	30	
cis-1,3-Dichloropropene	10.5	0.09	0.20	ug/L	10.0		105	80-124	8.41	30	
Toluene	10.8	0.05	0.20	ug/L	10.0		108	80-120	7.45	30	
trans-1,3-Dichloropropene	10.3	0.09	0.20	ug/L	10.0		103	71-127	7.69	30	



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Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLF0179-BSD2)						Prepared: 07-Jun-2023 Analyzed: 07-Jun-2023 11:26					
2-Hexanone	48.2	2.06	5.00	ug/L	50.0		96.4	69-133	7.55	30	
1,1,2-Trichloroethane	10.8	0.10	0.20	ug/L	10.0		108	80-121	6.89	30	
1,3-Dichloropropane	10.3	0.07	0.20	ug/L	10.0		103	80-120	7.05	30	
Tetrachloroethene	10.2	0.09	0.20	ug/L	10.0		102	80-120	4.23	30	
Dibromochloromethane	9.21	0.09	0.20	ug/L	10.0		92.1	65-135	9.63	30	
1,2-Dibromoethane	10.7	0.09	0.20	ug/L	10.0		107	80-121	7.04	30	
Chlorobenzene	10.7	0.06	0.20	ug/L	10.0		107	80-120	5.24	30	
Ethylbenzene	10.6	0.05	0.20	ug/L	10.0		106	80-120	6.29	30	
1,1,1,2-Tetrachloroethane	9.75	0.09	0.20	ug/L	10.0		97.5	80-120	7.45	30	
m,p-Xylene	21.5	0.14	0.40	ug/L	20.0		108	80-121	6.24	30	
o-Xylene	10.5	0.08	0.20	ug/L	10.0		105	80-121	5.72	30	
Xylenes, total	32.0	0.22	0.60	ug/L	30.0		107	76-127	6.07	30	
Styrene	10.8	0.09	0.20	ug/L	10.0		108	80-124	5.53	30	
Bromoform	9.59	0.15	0.20	ug/L	10.0		95.9	51-134	9.21	30	
1,1,2,2-Tetrachloroethane	10.9	0.03	0.20	ug/L	10.0		109	77-123	9.02	30	
1,2,3-Trichloropropane	10.5	0.16	0.50	ug/L	10.0		105	76-125	7.87	30	
trans-1,4-Dichloro 2-Butene	8.83	0.60	1.00	ug/L	10.0		88.3	55-129	6.50	30	
n-Propylbenzene	10.7	0.07	0.20	ug/L	10.0		107	78-130	6.26	30	
Bromobenzene	10.6	0.07	0.20	ug/L	10.0		106	80-120	6.32	30	
Isopropyl Benzene	10.6	0.07	0.20	ug/L	10.0		106	80-128	5.58	30	
2-Chlorotoluene	10.5	0.06	0.20	ug/L	10.0		105	78-122	5.75	30	
4-Chlorotoluene	10.8	0.06	0.20	ug/L	10.0		108	80-121	5.93	30	
t-Butylbenzene	10.3	0.07	0.20	ug/L	10.0		103	78-125	5.54	30	
1,3,5-Trimethylbenzene	10.4	0.07	0.20	ug/L	10.0		104	80-129	6.31	30	
1,2,4-Trimethylbenzene	10.5	0.05	0.20	ug/L	10.0		105	80-127	7.20	30	
s-Butylbenzene	10.8	0.06	0.20	ug/L	10.0		108	78-129	6.23	30	
4-Isopropyl Toluene	10.7	0.08	0.20	ug/L	10.0		107	79-130	5.74	30	
1,3-Dichlorobenzene	10.5	0.08	0.20	ug/L	10.0		105	80-120	5.34	30	
1,4-Dichlorobenzene	10.7	0.10	0.20	ug/L	10.0		107	80-120	5.87	30	
n-Butylbenzene	10.6	0.18	0.20	ug/L	10.0		106	74-129	5.69	30	
1,2-Dichlorobenzene	10.7	0.08	0.20	ug/L	10.0		107	80-120	7.63	30	
1,2-Dibromo-3-chloropropane	8.65	0.39	0.50	ug/L	10.0		86.5	62-123	8.23	30	Q
1,2,4-Trichlorobenzene	10.8	0.21	0.50	ug/L	10.0		108	64-124	7.20	30	
Hexachloro-1,3-Butadiene	9.71	1.00	2.00	ug/L	10.0		97.1	65-145	7.59	30	
Naphthalene	11.1	0.27	0.50	ug/L	10.0		111	50-134	10.10	30	



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLF0179-BSD2)						Prepared: 07-Jun-2023 Analyzed: 07-Jun-2023 11:26					
1,2,3-Trichlorobenzene	10.9	0.25	0.50	ug/L	10.0	109	49-133	9.73	30		
Dichlorodifluoromethane	9.33	0.13	0.20	ug/L	10.0	93.3	48-147	0.54	30		
Methyl tert-butyl Ether	10.3	0.14	0.50	ug/L	10.0	103	71-132	8.46	30		
2-Pentanone	56.9	2.34	5.00	ug/L	50.0	114	69-134	8.82	30		
Surrogate: 1,2-Dichloroethane-d4	4.79			ug/L	5.00	95.9	80-129				
Surrogate: Toluene-d8	5.03			ug/L	5.00	101	80-120				
Surrogate: 4-Bromofluorobenzene	4.77			ug/L	5.00	95.3	80-120				
Surrogate: 1,2-Dichlorobenzene-d4	5.05			ug/L	5.00	101	80-120				

Matrix Spike (BLF0179-MS1)		Source: 23F0084-05			Prepared: 07-Jun-2023		Analyzed: 07-Jun-2023 16:20				
Gasoline Range Organics (Tol-Nap)	720		100	ug/L	1000	ND	72.0	72-128			
Surrogate: Toluene-d8	5.09			ug/L	5.00	5.03	102	80-120			
Surrogate: 4-Bromofluorobenzene	4.86			ug/L	5.00	4.68	97.2	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BLF0179-MS2)		Source: 23F0084-05			Prepared: 07-Jun-2023		Analyzed: 07-Jun-2023 17:04				
Chloromethane	6.60	0.27	0.50	ug/L	10.0	ND	66.0	60-138			
Vinyl Chloride	6.99	0.08	0.20	ug/L	10.0	ND	69.9	66-133			
Bromomethane	8.05	0.23	1.00	ug/L	10.0	ND	80.5	72-131			
Chloroethane	8.54	0.05	0.20	ug/L	10.0	ND	85.4	60-155			
Trichlorofluoromethane	8.46	0.13	0.20	ug/L	10.0	ND	84.6	62-141			
Acrolein	48.2	2.70	5.00	ug/L	50.0	ND	96.5	52-190			
1,1,2-Trichloro-1,2,2-Trifluoroethane	9.31	0.11	0.20	ug/L	10.0	ND	93.1	76-129			
Acetone	47.0	1.91	5.00	ug/L	50.0	ND	94.0	58-142			
1,1-Dichloroethene	8.10	0.08	0.20	ug/L	10.0	ND	81.0	69-135			
Iodomethane	7.86	0.15	1.00	ug/L	10.0	ND	78.6	56-147			
Methylene Chloride	7.54	0.53	1.00	ug/L	10.0	ND	75.4	65-135			
Acrylonitrile	9.18	0.40	1.00	ug/L	10.0	ND	91.8	64-134			
Carbon Disulfide	8.56	0.06	0.20	ug/L	10.0	ND	85.6	78-125			
trans-1,2-Dichloroethene	8.21	0.07	0.20	ug/L	10.0	ND	82.1	78-128			
Vinyl Acetate	7.24	0.12	0.20	ug/L	10.0	ND	72.4	55-138			
1,1-Dichloroethane	7.45	0.04	0.20	ug/L	10.0	ND	74.5	76-124			*
2-Butanone	46.9	1.77	5.00	ug/L	50.0	ND	93.8	61-140			
2,2-Dichloropropane	7.23	0.11	0.20	ug/L	10.0	ND	72.3	66-147			



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLF0179-MS2)											
Source: 23F0084-05			Prepared: 07-Jun-2023			Analyzed: 07-Jun-2023 17:04					
cis-1,2-Dichloroethene	7.87	0.08	0.20	ug/L	10.0	ND	78.7	80-121			*
Chloroform	7.37	0.05	0.20	ug/L	10.0	ND	73.7	80-122			*
Bromochloromethane	7.93	0.09	0.20	ug/L	10.0	ND	79.3	80-121			*
1,1,1-Trichloroethane	7.60	0.08	0.20	ug/L	10.0	ND	76.0	79-123			*
1,1-Dichloropropene	8.08	0.09	0.20	ug/L	10.0	ND	80.8	80-127			
Carbon tetrachloride	7.15	0.09	0.20	ug/L	10.0	ND	71.5	53-137			
1,2-Dichloroethane	7.05	0.08	0.20	ug/L	10.0	ND	70.5	75-123			*
Benzene	7.80	0.05	0.20	ug/L	10.0	ND	78.0	80-120			*
Trichloroethene	7.79	0.07	0.20	ug/L	10.0	ND	77.9	80-120			*
1,2-Dichloropropane	7.24	0.07	0.20	ug/L	10.0	ND	72.4	80-120			*
Bromodichloromethane	6.51	0.09	0.20	ug/L	10.0	ND	65.1	80-121			*
Dibromomethane	7.92	0.06	0.20	ug/L	10.0	ND	79.2	80-120			*
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L	10.0	ND		64-120			*, U
4-Methyl-2-Pentanone	47.6	1.90	5.00	ug/L	50.0	ND	95.3	67-133			
cis-1,3-Dichloropropene	7.23	0.09	0.20	ug/L	10.0	ND	72.3	80-124			*
Toluene	7.69	0.05	0.20	ug/L	10.0	ND	76.9	80-120			*
trans-1,3-Dichloropropene	7.29	0.09	0.20	ug/L	10.0	ND	72.9	71-127			
2-Hexanone	44.6	2.06	5.00	ug/L	50.0	ND	89.2	69-133			
1,1,2-Trichloroethane	8.23	0.10	0.20	ug/L	10.0	ND	82.3	80-121			
1,3-Dichloropropane	7.91	0.07	0.20	ug/L	10.0	ND	79.1	80-120			*
Tetrachloroethene	7.81	0.09	0.20	ug/L	10.0	ND	78.1	80-120			*
Dibromochloromethane	6.49	0.09	0.20	ug/L	10.0	ND	64.9	65-135			*
1,2-Dibromoethane	8.33	0.09	0.20	ug/L	10.0	ND	83.3	80-121			
Chlorobenzene	7.55	0.06	0.20	ug/L	10.0	ND	75.5	80-120			*
Ethylbenzene	7.75	0.05	0.20	ug/L	10.0	ND	77.5	80-120			*
1,1,1,2-Tetrachloroethane	6.68	0.09	0.20	ug/L	10.0	ND	66.8	80-120			*
m,p-Xylene	15.8	0.14	0.40	ug/L	20.0	ND	78.8	80-121			*
o-Xylene	7.41	0.08	0.20	ug/L	10.0	ND	74.1	80-121			*
Xylenes, total	23.2	0.22	0.60	ug/L	30.0	ND	77.3	76-127			
Styrene	7.62	0.09	0.20	ug/L	10.0	ND	76.2	80-124			*
Bromoform	6.82	0.15	0.20	ug/L	10.0	ND	68.2	51-134			
1,1,2,2-Tetrachloroethane	8.85	0.03	0.20	ug/L	10.0	ND	88.5	77-123			
1,2,3-Trichloropropane	8.71	0.16	0.50	ug/L	10.0	ND	87.1	76-125			
trans-1,4-Dichloro 2-Butene	7.02	0.60	1.00	ug/L	10.0	ND	70.2	55-129			
n-Propylbenzene	7.67	0.07	0.20	ug/L	10.0	ND	76.7	78-130			*



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLF0179-MS2)											
Source: 23F0084-05			Prepared: 07-Jun-2023			Analyzed: 07-Jun-2023 17:04					
Bromobenzene	6.99	0.07	0.20	ug/L	10.0	ND	69.9	80-120			*
Isopropyl Benzene	7.59	0.07	0.20	ug/L	10.0	ND	75.9	80-128			*
2-Chlorotoluene	7.06	0.06	0.20	ug/L	10.0	ND	70.6	78-122			*
4-Chlorotoluene	7.25	0.06	0.20	ug/L	10.0	ND	72.5	80-121			*
t-Butylbenzene	7.43	0.07	0.20	ug/L	10.0	ND	74.3	78-125			*
1,3,5-Trimethylbenzene	7.12	0.07	0.20	ug/L	10.0	ND	71.2	80-129			*
1,2,4-Trimethylbenzene	7.12	0.05	0.20	ug/L	10.0	ND	71.2	80-127			*
s-Butylbenzene	7.83	0.06	0.20	ug/L	10.0	ND	78.3	78-129			*
4-Isopropyl Toluene	7.56	0.08	0.20	ug/L	10.0	ND	75.6	79-130			*
1,3-Dichlorobenzene	6.99	0.08	0.20	ug/L	10.0	ND	69.9	80-120			*
1,4-Dichlorobenzene	6.96	0.10	0.20	ug/L	10.0	ND	69.6	80-120			*
n-Butylbenzene	7.44	0.18	0.20	ug/L	10.0	ND	74.4	74-129			*
1,2-Dichlorobenzene	7.19	0.08	0.20	ug/L	10.0	ND	71.9	80-120			*
1,2-Dibromo-3-chloropropane	7.31	0.39	0.50	ug/L	10.0	ND	73.1	62-123			Q
1,2,4-Trichlorobenzene	6.83	0.21	0.50	ug/L	10.0	ND	68.3	64-124			
Hexachloro-1,3-Butadiene	6.13	1.00	2.00	ug/L	10.0	ND	61.3	65-145			*
Naphthalene	8.42	0.27	0.50	ug/L	10.0	ND	84.2	50-134			
1,2,3-Trichlorobenzene	7.23	0.25	0.50	ug/L	10.0	ND	72.3	49-133			
Dichlorodifluoromethane	8.91	0.13	0.20	ug/L	10.0	ND	89.1	48-147			
Methyl tert-butyl Ether	8.12	0.14	0.50	ug/L	10.0	ND	81.2	71-132			
2-Pentanone	52.6	2.34	5.00	ug/L	50.0	ND	105	69-134			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.29			ug/L	5.00	5.11	106	80-129			
<i>Surrogate: Toluene-d8</i>	4.94			ug/L	5.00	5.03	98.8	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	5.03			ug/L	5.00	4.68	101	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.23			ug/L	5.00	5.24	105	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLF0179-MSD1)											
Source: 23F0084-05			Prepared: 07-Jun-2023			Analyzed: 07-Jun-2023 16:42					
Gasoline Range Organics (Tol-Nap)	735		100	ug/L	1000	ND	73.5	72-128	2.04	30	
<i>Surrogate: Toluene-d8</i>	5.01			ug/L	5.00	5.03	100	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.96			ug/L	5.00	4.68	99.1	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLF0179-MSD2)											
Source: 23F0084-05			Prepared: 07-Jun-2023			Analyzed: 07-Jun-2023 17:26					



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLF0179-MSD2)											
Source: 23F0084-05			Prepared: 07-Jun-2023 Analyzed: 07-Jun-2023 17:26								
Chloromethane	6.08	0.27	0.50	ug/L	10.0	ND	60.8	60-138	8.19	30	
Vinyl Chloride	6.51	0.08	0.20	ug/L	10.0	ND	65.1	66-133	7.07	30	*
Bromomethane	7.27	0.23	1.00	ug/L	10.0	ND	72.7	72-131	10.10	30	
Chloroethane	8.30	0.05	0.20	ug/L	10.0	ND	83.0	60-155	2.76	30	
Trichlorofluoromethane	8.04	0.13	0.20	ug/L	10.0	ND	80.4	62-141	5.11	30	
Acrolein	45.0	2.70	5.00	ug/L	50.0	ND	90.0	52-190	6.99	30	
1,1,2-Trichloro-1,2,2-Trifluoroethane	8.67	0.11	0.20	ug/L	10.0	ND	86.7	76-129	7.02	30	
Acetone	45.0	1.91	5.00	ug/L	50.0	ND	90.1	58-142	4.30	30	
1,1-Dichloroethene	7.61	0.08	0.20	ug/L	10.0	ND	76.1	69-135	6.21	30	
Iodomethane	7.41	0.15	1.00	ug/L	10.0	ND	74.1	56-147	5.95	30	
Methylene Chloride	6.98	0.53	1.00	ug/L	10.0	ND	69.8	65-135	7.72	30	
Acrylonitrile	8.74	0.40	1.00	ug/L	10.0	ND	87.4	64-134	4.98	30	
Carbon Disulfide	7.97	0.06	0.20	ug/L	10.0	ND	79.7	78-125	7.21	30	
trans-1,2-Dichloroethene	7.59	0.07	0.20	ug/L	10.0	ND	75.9	78-128	7.73	30	*
Vinyl Acetate	6.59	0.12	0.20	ug/L	10.0	ND	65.9	55-138	9.37	30	
1,1-Dichloroethane	6.95	0.04	0.20	ug/L	10.0	ND	69.5	76-124	6.88	30	*
2-Butanone	43.8	1.77	5.00	ug/L	50.0	ND	87.7	61-140	6.74	30	
2,2-Dichloropropane	6.64	0.11	0.20	ug/L	10.0	ND	66.4	66-147	8.51	30	
cis-1,2-Dichloroethene	7.26	0.08	0.20	ug/L	10.0	ND	72.6	80-121	8.06	30	*
Chloroform	6.93	0.05	0.20	ug/L	10.0	ND	69.3	80-122	6.07	30	*
Bromochloromethane	7.23	0.09	0.20	ug/L	10.0	ND	72.3	80-121	9.22	30	*
1,1,1-Trichloroethane	7.02	0.08	0.20	ug/L	10.0	ND	70.2	79-123	7.86	30	*
1,1-Dichloropropene	7.50	0.09	0.20	ug/L	10.0	ND	75.0	80-127	7.42	30	*
Carbon tetrachloride	6.53	0.09	0.20	ug/L	10.0	ND	65.3	53-137	9.08	30	
1,2-Dichloroethane	6.35	0.08	0.20	ug/L	10.0	ND	63.5	75-123	10.50	30	*
Benzene	7.23	0.05	0.20	ug/L	10.0	ND	72.3	80-120	7.56	30	*
Trichloroethene	7.15	0.07	0.20	ug/L	10.0	ND	71.5	80-120	8.61	30	*
1,2-Dichloropropane	6.51	0.07	0.20	ug/L	10.0	ND	65.1	80-120	10.60	30	*
Bromodichloromethane	6.02	0.09	0.20	ug/L	10.0	ND	60.2	80-121	7.74	30	*
Dibromomethane	7.18	0.06	0.20	ug/L	10.0	ND	71.8	80-120	9.88	30	*
2-Chloroethyl vinyl ether	ND	0.55	1.00	ug/L	10.0	ND		64-120			*, U
4-Methyl-2-Pentanone	42.7	1.90	5.00	ug/L	50.0	ND	85.3	67-133	11.00	30	
cis-1,3-Dichloropropene	6.66	0.09	0.20	ug/L	10.0	ND	66.6	80-124	8.20	30	*
Toluene	7.15	0.05	0.20	ug/L	10.0	ND	71.5	80-120	7.33	30	*
trans-1,3-Dichloropropene	6.69	0.09	0.20	ug/L	10.0	ND	66.9	71-127	8.46	30	*



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLF0179-MSD2)											
Source: 23F0084-05			Prepared: 07-Jun-2023 Analyzed: 07-Jun-2023 17:26								
2-Hexanone	39.6	2.06	5.00	ug/L	50.0	ND	79.2	69-133	11.90	30	
1,1,2-Trichloroethane	7.47	0.10	0.20	ug/L	10.0	ND	74.7	80-121	9.68	30	*
1,3-Dichloropropane	7.08	0.07	0.20	ug/L	10.0	ND	70.8	80-120	11.10	30	*
Tetrachloroethene	6.95	0.09	0.20	ug/L	10.0	ND	69.5	80-120	11.60	30	*
Dibromochloromethane	5.81	0.09	0.20	ug/L	10.0	ND	58.1	65-135	11.20	30	*
1,2-Dibromoethane	7.70	0.09	0.20	ug/L	10.0	ND	77.0	80-121	7.83	30	*
Chlorobenzene	6.69	0.06	0.20	ug/L	10.0	ND	66.9	80-120	12.00	30	*
Ethylbenzene	6.81	0.05	0.20	ug/L	10.0	ND	68.1	80-120	12.90	30	*
1,1,1,2-Tetrachloroethane	5.99	0.09	0.20	ug/L	10.0	ND	59.9	80-120	10.90	30	*
m,p-Xylene	14.0	0.14	0.40	ug/L	20.0	ND	69.8	80-121	12.10	30	*
o-Xylene	6.67	0.08	0.20	ug/L	10.0	ND	66.7	80-121	10.50	30	*
Xylenes, total	20.6	0.22	0.60	ug/L	30.0	ND	68.8	76-127	11.60	30	*
Styrene	6.66	0.09	0.20	ug/L	10.0	ND	66.6	80-124	13.50	30	*
Bromoform	6.02	0.15	0.20	ug/L	10.0	ND	60.2	51-134	12.50	30	
1,1,2,2-Tetrachloroethane	8.06	0.03	0.20	ug/L	10.0	ND	80.6	77-123	9.34	30	
1,2,3-Trichloropropane	7.58	0.16	0.50	ug/L	10.0	ND	75.8	76-125	13.80	30	*
trans-1,4-Dichloro 2-Butene	6.47	0.60	1.00	ug/L	10.0	ND	64.7	55-129	8.15	30	
n-Propylbenzene	6.72	0.07	0.20	ug/L	10.0	ND	67.2	78-130	13.30	30	*
Bromobenzene	6.11	0.07	0.20	ug/L	10.0	ND	61.1	80-120	13.40	30	*
Isopropyl Benzene	6.78	0.07	0.20	ug/L	10.0	ND	67.8	80-128	11.20	30	*
2-Chlorotoluene	6.26	0.06	0.20	ug/L	10.0	ND	62.6	78-122	12.00	30	*
4-Chlorotoluene	6.39	0.06	0.20	ug/L	10.0	ND	63.9	80-121	12.70	30	*
t-Butylbenzene	6.52	0.07	0.20	ug/L	10.0	ND	65.2	78-125	13.10	30	*
1,3,5-Trimethylbenzene	6.30	0.07	0.20	ug/L	10.0	ND	63.0	80-129	12.30	30	*
1,2,4-Trimethylbenzene	6.25	0.05	0.20	ug/L	10.0	ND	62.5	80-127	13.00	30	*
s-Butylbenzene	6.95	0.06	0.20	ug/L	10.0	ND	69.5	78-129	11.80	30	*
4-Isopropyl Toluene	6.64	0.08	0.20	ug/L	10.0	ND	66.4	79-130	13.10	30	*
1,3-Dichlorobenzene	6.15	0.08	0.20	ug/L	10.0	ND	61.5	80-120	12.70	30	*
1,4-Dichlorobenzene	6.12	0.10	0.20	ug/L	10.0	ND	61.2	80-120	12.80	30	*
n-Butylbenzene	6.62	0.18	0.20	ug/L	10.0	ND	66.2	74-129	11.80	30	*
1,2-Dichlorobenzene	6.33	0.08	0.20	ug/L	10.0	ND	63.3	80-120	12.70	30	*
1,2-Dibromo-3-chloropropane	6.56	0.39	0.50	ug/L	10.0	ND	65.6	62-123	10.80	30	Q
1,2,4-Trichlorobenzene	6.09	0.21	0.50	ug/L	10.0	ND	60.9	64-124	11.60	30	*
Hexachloro-1,3-Butadiene	5.35	1.00	2.00	ug/L	10.0	ND	53.5	65-145	13.50	30	*
Naphthalene	7.69	0.27	0.50	ug/L	10.0	ND	76.9	50-134	9.07	30	



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 24-Jun-2023 11:52
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLF0179 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLF0179-MSD2)		Source: 23F0084-05		Prepared: 07-Jun-2023		Analyzed: 07-Jun-2023 17:26					
1,2,3-Trichlorobenzene	6.63	0.25	0.50	ug/L	10.0	ND	66.3	49-133	8.64	30	
Dichlorodifluoromethane	8.09	0.13	0.20	ug/L	10.0	ND	80.9	48-147	9.67	30	
Methyl tert-butyl Ether	7.52	0.14	0.50	ug/L	10.0	ND	75.2	71-132	7.67	30	
2-Pentanone	48.5	2.34	5.00	ug/L	50.0	ND	97.0	69-134	8.08	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.45			ug/L	5.00	5.11	109	80-129			
<i>Surrogate: Toluene-d8</i>	5.02			ug/L	5.00	5.03	100	80-120			
<i>Surrogate: 4-Bromofluorobenzene</i>	4.78			ug/L	5.00	4.68	95.5	80-120			
<i>Surrogate: 1,2-Dichlorobenzene-d4</i>	5.25			ug/L	5.00	5.24	105	80-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Semivolatle Organic Compounds - Quality Control

Batch BLF0094 - EPA 8270E

Instrument: NT17 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0094-BLK1)											
						Prepared: 07-Jun-2023 Analyzed: 14-Jun-2023 12:49					
Phenol	ND	0.01	0.2	ug/L							U
bis(2-chloroethyl) ether	ND	0.03	0.2	ug/L							U
2-Chlorophenol	ND	0.03	0.2	ug/L							U
1,3-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,4-Dichlorobenzene	ND	0.03	0.2	ug/L							U
1,2-Dichlorobenzene	ND	0.03	0.2	ug/L							U
Benzyl Alcohol	ND	0.02	0.2	ug/L							U
2,2'-Oxybis(1-chloropropane)	ND	0.03	0.2	ug/L							U
2-Methylphenol	ND	0.03	0.2	ug/L							U
Hexachloroethane	ND	0.04	0.2	ug/L							U
N-Nitroso-di-n-Propylamine	ND	0.04	0.2	ug/L							U
4-Methylphenol	ND	0.03	0.2	ug/L							U
Nitrobenzene	ND	0.03	0.2	ug/L							U
Isophorone	ND	0.03	0.2	ug/L							U
2-Nitrophenol	ND	0.04	1.0	ug/L							U
2,4-Dimethylphenol	ND	0.3	1.0	ug/L							U
Bis(2-Chloroethoxy)methane	ND	0.03	0.2	ug/L							U
2,4-Dichlorophenol	ND	0.1	1.0	ug/L							U
1,2,4-Trichlorobenzene	ND	0.03	0.2	ug/L							U
Naphthalene	ND	0.03	0.2	ug/L							U
Benzoic acid	ND	0.1	2.0	ug/L							U
4-Chloroaniline	ND	0.04	1.0	ug/L							U
Hexachlorobutadiene	ND	0.04	0.2	ug/L							U
4-Chloro-3-Methylphenol	ND	0.1	1.0	ug/L							U
2-Methylnaphthalene	ND	0.03	0.2	ug/L							U
Hexachlorocyclopentadiene	ND	0.1	1.0	ug/L							U
2,4,6-Trichlorophenol	ND	0.2	1.0	ug/L							U
2,4,5-Trichlorophenol	ND	0.1	1.0	ug/L							U
2-Chloronaphthalene	ND	0.03	0.2	ug/L							U
2-Nitroaniline	ND	0.2	1.0	ug/L							U
Acenaphthylene	ND	0.02	0.2	ug/L							U
Dimethylphthalate	ND	0.04	0.2	ug/L							U
2,6-Dinitrotoluene	ND	0.2	1.0	ug/L							U
Acenaphthene	ND	0.03	0.2	ug/L							U
3-Nitroaniline	ND	0.2	1.0	ug/L							U



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLF0094 - EPA 8270E

Instrument: NT17 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0094-BLK1)											
						Prepared: 07-Jun-2023 Analyzed: 14-Jun-2023 12:49					
2,4-Dinitrophenol	ND	0.2	2.0	ug/L							U
Dibenzofuran	ND	0.02	0.2	ug/L							U
4-Nitrophenol	ND	0.06	1.0	ug/L							U
2,4-Dinitrotoluene	ND	0.1	1.0	ug/L							U
Fluorene	ND	0.02	0.2	ug/L							U
4-Chlorophenylphenyl ether	ND	0.02	0.2	ug/L							U
Diethyl phthalate	ND	0.06	0.2	ug/L							U
4-Nitroaniline	ND	0.2	1.0	ug/L							U
4,6-Dinitro-2-methylphenol	ND	0.4	2.0	ug/L							U
N-Nitrosodiphenylamine	ND	0.03	0.2	ug/L							U
4-Bromophenyl phenyl ether	ND	0.02	0.2	ug/L							U
Hexachlorobenzene	ND	0.04	0.2	ug/L							U
Pentachlorophenol	ND	0.1	1.0	ug/L							U
Phenanthrene	ND	0.02	0.2	ug/L							U
Anthracene	ND	0.03	0.2	ug/L							U
Carbazole	ND	0.04	0.2	ug/L							U
Di-n-Butylphthalate	ND	0.05	0.2	ug/L							U
Fluoranthene	ND	0.03	0.2	ug/L							U
Pyrene	ND	0.03	0.2	ug/L							U
Butylbenzylphthalate	ND	0.07	0.2	ug/L							U
Benzo(a)anthracene	ND	0.04	0.2	ug/L							U
3,3'-Dichlorobenzidine	ND	0.3	1.0	ug/L							U
Chrysene	ND	0.04	0.2	ug/L							U
bis(2-Ethylhexyl)phthalate	ND	0.2	0.2	ug/L							U
Di-n-Octylphthalate	ND	0.05	0.2	ug/L							U
Benzo(a)fluoranthene, Total	ND	0.08	0.4	ug/L							U
Benzo(a)pyrene	ND	0.05	0.2	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.06	0.2	ug/L							U
Dibenzo(a,h)anthracene	ND	0.07	0.2	ug/L							U
Benzo(g,h,i)perylene	ND	0.04	0.2	ug/L							U
1-Methylnaphthalene	ND	0.03	0.2	ug/L							U
<i>Surrogate: 2-Fluorophenol</i>	3.01			ug/L	7.50		40.2	30-160			
<i>Surrogate: Phenol-d5</i>	1.99			ug/L	7.50		26.6	30-160			*
<i>Surrogate: 2-Chlorophenol-d4</i>	5.71			ug/L	7.50		76.1	30-160			



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Semivolatile Organic Compounds - Quality Control

Batch BLF0094 - EPA 8270E

Instrument: NT17 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0094-BLK1)					Prepared: 07-Jun-2023		Analyzed: 14-Jun-2023 12:49				
Surrogate: 1,2-Dichlorobenzene-d4	2.80			ug/L	5.00		56.0	30-160			
Surrogate: Nitrobenzene-d5	3.77			ug/L	5.00		75.4	30-160			
Surrogate: 2-Fluorobiphenyl	3.57			ug/L	5.00		71.4	30-160			
Surrogate: 2,4,6-Tribromophenol	7.65			ug/L	7.50		102	30-160			Q
Surrogate: p-Terphenyl-d14	3.84			ug/L	5.00		76.9	30-160			
LCS (BLF0094-BS1)					Prepared: 07-Jun-2023		Analyzed: 14-Jun-2023 13:27				
Phenol	1.5	0.01	0.2	ug/L	5.00		30.7	30-160			
bis(2-chloroethyl) ether	3.8	0.03	0.2	ug/L	5.00		76.0	30-160			
2-Chlorophenol	3.4	0.03	0.2	ug/L	5.00		68.2	30-160			
1,3-Dichlorobenzene	3.2	0.03	0.2	ug/L	5.00		64.7	30-160			
1,4-Dichlorobenzene	3.2	0.03	0.2	ug/L	5.00		63.9	30-160			
1,2-Dichlorobenzene	3.3	0.03	0.2	ug/L	5.00		65.4	30-160			
Benzyl Alcohol	2.8	0.02	0.2	ug/L	5.00		55.7	30-160			
2,2'-Oxybis(1-chloropropane)	4.4	0.03	0.2	ug/L	5.00		88.8	30-160			
2-Methylphenol	2.9	0.03	0.2	ug/L	5.00		57.7	30-160			
Hexachloroethane	3.4	0.04	0.2	ug/L	5.00		67.3	30-160			
N-Nitroso-di-n-Propylamine	4.0	0.04	0.2	ug/L	5.00		80.1	30-160			
4-Methylphenol	3.0	0.03	0.2	ug/L	5.00		59.3	30-160			
Nitrobenzene	4.4	0.03	0.2	ug/L	5.00		87.1	30-160			
Isophorone	4.8	0.03	0.2	ug/L	5.00		95.5	30-160			
2-Nitrophenol	3.9	0.04	1.0	ug/L	5.00		77.8	30-160			Q
2,4-Dimethylphenol	11.0	0.3	1.0	ug/L	13.0		84.3	30-160			
Bis(2-Chloroethoxy)methane	4.7	0.03	0.2	ug/L	5.00		94.0	30-160			
2,4-Dichlorophenol	13.3	0.1	1.0	ug/L	13.0		103	30-160			
1,2,4-Trichlorobenzene	3.4	0.03	0.2	ug/L	5.00		67.6	30-160			
Naphthalene	3.6	0.03	0.2	ug/L	5.00		72.3	30-160			
Benzoic acid	11.9	0.1	2.0	ug/L	23.0		51.6	30-160			
4-Chloroaniline	2.9	0.04	1.0	ug/L	13.0		22.0	30-160			*
Hexachlorobutadiene	5.2	0.04	0.2	ug/L	5.00		104	30-160			Q
4-Chloro-3-Methylphenol	12.9	0.1	1.0	ug/L	13.0		99.2	30-160			
2-Methylnaphthalene	3.6	0.03	0.2	ug/L	5.00		72.0	30-160			
Hexachlorocyclopentadiene	2.2	0.1	1.0	ug/L	13.0		17.0	30-160			*, Q
2,4,6-Trichlorophenol	12.7	0.2	1.0	ug/L	13.0		98.0	30-160			
2,4,5-Trichlorophenol	12.9	0.1	1.0	ug/L	13.0		99.0	30-160			



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Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLF0094 - EPA 8270E

Instrument: NT17 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLF0094-BS1)						Prepared: 07-Jun-2023 Analyzed: 14-Jun-2023 13:27					
2-Chloronaphthalene	3.9	0.03	0.2	ug/L	5.00		77.2	30-160			
2-Nitroaniline	13.1	0.2	1.0	ug/L	13.0		101	30-160			
Acenaphthylene	4.1	0.02	0.2	ug/L	5.00		81.1	30-160			
Dimethylphthalate	4.9	0.04	0.2	ug/L	5.00		97.1	30-160			
2,6-Dinitrotoluene	13.3	0.2	1.0	ug/L	13.0		102	30-160			
Acenaphthene	4.0	0.03	0.2	ug/L	5.00		80.4	30-160			
3-Nitroaniline	10.3	0.2	1.0	ug/L	13.0		79.4	30-160			
2,4-Dinitrophenol	26.0	0.2	2.0	ug/L	23.0		113	30-160			
Dibenzofuran	4.2	0.02	0.2	ug/L	5.00		83.8	30-160			
4-Nitrophenol	6.0	0.06	1.0	ug/L	13.0		46.2	30-160			Q
2,4-Dinitrotoluene	13.6	0.1	1.0	ug/L	13.0		105	30-160			
Fluorene	4.6	0.02	0.2	ug/L	5.00		92.0	30-160			
4-Chlorophenylphenyl ether	4.9	0.02	0.2	ug/L	5.00		98.2	30-160			
Diethyl phthalate	5.0	0.06	0.2	ug/L	5.00		101	30-160			
4-Nitroaniline	8.8	0.2	1.0	ug/L	13.0		67.9	30-160			
4,6-Dinitro-2-methylphenol	23.2	0.4	2.0	ug/L	23.0		101	30-160			
N-Nitrosodiphenylamine	4.1	0.03	0.2	ug/L	5.00		81.7	30-160			
4-Bromophenyl phenyl ether	5.1	0.02	0.2	ug/L	5.00		101	30-160			
Hexachlorobenzene	5.2	0.04	0.2	ug/L	5.00		104	30-160			Q
Pentachlorophenol	13.8	0.1	1.0	ug/L	13.0		106	30-160			
Phenanthrene	4.0	0.02	0.2	ug/L	5.00		80.6	30-160			
Anthracene	3.8	0.03	0.2	ug/L	5.00		75.0	30-160			
Carbazole	5.6	0.04	0.2	ug/L	5.00		112	30-160			
Di-n-Butylphthalate	4.5	0.05	0.2	ug/L	5.00		90.9	30-160			
Fluoranthene	3.8	0.03	0.2	ug/L	5.00		75.8	30-160			
Pyrene	3.7	0.03	0.2	ug/L	5.00		74.4	30-160			
Butylbenzylphthalate	3.9	0.07	0.2	ug/L	5.00		77.5	30-160			
Benzo(a)anthracene	4.3	0.04	0.2	ug/L	5.00		85.8	30-160			
3,3'-Dichlorobenzidine	10.0	0.3	1.0	ug/L	13.0		77.0	30-160			
Chrysene	4.2	0.04	0.2	ug/L	5.00		83.4	30-160			
bis(2-Ethylhexyl)phthalate	4.4	0.2	0.2	ug/L	5.00		88.1	30-160			
Di-n-Octylphthalate	4.4	0.05	0.2	ug/L	5.00		87.7	30-160			
Benzo(a)fluoranthene, Total	8.2	0.08	0.4	ug/L	10.0		81.7	30-160			
Benzo(a)pyrene	4.1	0.05	0.2	ug/L	5.00		82.4	30-160			
Indeno(1,2,3-cd)pyrene	4.3	0.06	0.2	ug/L	5.00		86.0	30-160			



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24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLF0094 - EPA 8270E

Instrument: NT17 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLF0094-BS1)						Prepared: 07-Jun-2023 Analyzed: 14-Jun-2023 13:27					
Dibenzo(a,h)anthracene	4.3	0.07	0.2	ug/L	5.00		86.1	30-160			
Benzo(g,h,i)perylene	4.2	0.04	0.2	ug/L	5.00		83.9	30-160			
1-Methylnaphthalene	3.8	0.03	0.2	ug/L	5.00		76.8	30-160			
Surrogate: 2-Fluorophenol	3.22			ug/L	7.50		42.9	30-160			
Surrogate: Phenol-d5	2.23			ug/L	7.50		29.7	30-160			*
Surrogate: 2-Chlorophenol-d4	6.19			ug/L	7.50		82.5	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	3.01			ug/L	5.00		60.2	30-160			
Surrogate: Nitrobenzene-d5	3.93			ug/L	5.00		78.6	30-160			
Surrogate: 2-Fluorobiphenyl	3.57			ug/L	5.00		71.4	30-160			
Surrogate: 2,4,6-Tribromophenol	8.51			ug/L	7.50		113	30-160			Q
Surrogate: p-Terphenyl-d14	3.92			ug/L	5.00		78.5	30-160			
LCS Dup (BLF0094-BSD1)						Prepared: 07-Jun-2023 Analyzed: 14-Jun-2023 14:05					
Phenol	1.4	0.01	0.2	ug/L	5.00		27.9	30-160	9.65	30	*
bis(2-chloroethyl) ether	3.5	0.03	0.2	ug/L	5.00		69.2	30-160	9.43	30	
2-Chlorophenol	3.1	0.03	0.2	ug/L	5.00		63.0	30-160	7.98	30	
1,3-Dichlorobenzene	3.1	0.03	0.2	ug/L	5.00		61.9	30-160	4.49	30	
1,4-Dichlorobenzene	3.5	0.03	0.2	ug/L	5.00		69.3	30-160	8.11	30	
1,2-Dichlorobenzene	3.3	0.03	0.2	ug/L	5.00		65.2	30-160	0.25	30	
Benzyl Alcohol	2.6	0.02	0.2	ug/L	5.00		51.2	30-160	8.43	30	
2,2'-Oxybis(1-chloropropane)	4.3	0.03	0.2	ug/L	5.00		85.4	30-160	3.87	30	
2-Methylphenol	2.6	0.03	0.2	ug/L	5.00		51.2	30-160	11.80	30	
Hexachloroethane	3.3	0.04	0.2	ug/L	5.00		65.2	30-160	3.25	30	
N-Nitroso-di-n-Propylamine	3.8	0.04	0.2	ug/L	5.00		77.0	30-160	3.98	30	
4-Methylphenol	2.7	0.03	0.2	ug/L	5.00		53.0	30-160	11.10	30	
Nitrobenzene	4.5	0.03	0.2	ug/L	5.00		89.8	30-160	3.07	30	
Isophorone	4.9	0.03	0.2	ug/L	5.00		97.7	30-160	2.19	30	
2-Nitrophenol	4.1	0.04	1.0	ug/L	5.00		81.7	30-160	4.83	30	Q
2,4-Dimethylphenol	10.0	0.3	1.0	ug/L	13.0		77.3	30-160	8.66	30	
Bis(2-Chloroethoxy)methane	4.8	0.03	0.2	ug/L	5.00		96.4	30-160	2.45	30	
2,4-Dichlorophenol	14.5	0.1	1.0	ug/L	13.0		111	30-160	7.97	30	
1,2,4-Trichlorobenzene	4.1	0.03	0.2	ug/L	5.00		82.6	30-160	19.90	30	
Naphthalene	3.8	0.03	0.2	ug/L	5.00		76.3	30-160	5.43	30	
Benzoic acid	12.4	0.1	2.0	ug/L	23.0		54.0	30-160	4.53	30	
4-Chloroaniline	2.3	0.04	1.0	ug/L	13.0		17.8	30-160	21.00	30	*



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLF0094 - EPA 8270E

Instrument: NT17 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLF0094-BSD1)						Prepared: 07-Jun-2023 Analyzed: 14-Jun-2023 14:05					
Hexachlorobutadiene	5.5	0.04	0.2	ug/L	5.00	109	30-160	4.98	30		Q
4-Chloro-3-Methylphenol	13.9	0.1	1.0	ug/L	13.0	107	30-160	7.59	30		
2-Methylnaphthalene	3.9	0.03	0.2	ug/L	5.00	77.8	30-160	7.86	30		
Hexachlorocyclopentadiene	2.4	0.1	1.0	ug/L	13.0	18.3	30-160	7.37	30		*, Q
2,4,6-Trichlorophenol	14.1	0.2	1.0	ug/L	13.0	109	30-160	10.20	30		
2,4,5-Trichlorophenol	14.2	0.1	1.0	ug/L	13.0	110	30-160	10.10	30		
2-Chloronaphthalene	4.1	0.03	0.2	ug/L	5.00	81.6	30-160	5.55	30		
2-Nitroaniline	13.6	0.2	1.0	ug/L	13.0	104	30-160	3.23	30		
Acenaphthylene	4.3	0.02	0.2	ug/L	5.00	85.2	30-160	4.85	30		
Dimethylphthalate	4.9	0.04	0.2	ug/L	5.00	98.4	30-160	1.25	30		
2,6-Dinitrotoluene	13.7	0.2	1.0	ug/L	13.0	105	30-160	2.91	30		
Acenaphthene	4.3	0.03	0.2	ug/L	5.00	85.7	30-160	6.44	30		
3-Nitroaniline	11.4	0.2	1.0	ug/L	13.0	87.9	30-160	10.20	30		
2,4-Dinitrophenol	30.1	0.2	2.0	ug/L	23.0	131	30-160	14.60	30		
Dibenzofuran	4.4	0.02	0.2	ug/L	5.00	87.3	30-160	4.11	30		
4-Nitrophenol	6.5	0.06	1.0	ug/L	13.0	49.9	30-160	7.63	30		Q
2,4-Dinitrotoluene	14.3	0.1	1.0	ug/L	13.0	110	30-160	4.86	30		
Fluorene	4.7	0.02	0.2	ug/L	5.00	93.7	30-160	1.85	30		
4-Chlorophenylphenyl ether	5.0	0.02	0.2	ug/L	5.00	100	30-160	1.91	30		
Diethyl phthalate	5.2	0.06	0.2	ug/L	5.00	103	30-160	2.64	30		
4-Nitroaniline	10.6	0.2	1.0	ug/L	13.0	81.9	30-160	18.60	30		
4,6-Dinitro-2-methylphenol	26.3	0.4	2.0	ug/L	23.0	114	30-160	12.20	30		
N-Nitrosodiphenylamine	4.2	0.03	0.2	ug/L	5.00	83.4	30-160	2.03	30		
4-Bromophenyl phenyl ether	5.3	0.02	0.2	ug/L	5.00	106	30-160	4.40	30		
Hexachlorobenzene	5.5	0.04	0.2	ug/L	5.00	109	30-160	4.92	30		Q
Pentachlorophenol	15.0	0.1	1.0	ug/L	13.0	115	30-160	8.42	30		
Phenanthrene	4.2	0.02	0.2	ug/L	5.00	83.9	30-160	3.94	30		
Anthracene	3.9	0.03	0.2	ug/L	5.00	77.4	30-160	3.05	30		
Carbazole	5.8	0.04	0.2	ug/L	5.00	115	30-160	2.67	30		
Di-n-Butylphthalate	4.7	0.05	0.2	ug/L	5.00	94.4	30-160	3.83	30		
Fluoranthene	3.9	0.03	0.2	ug/L	5.00	77.6	30-160	2.25	30		
Pyrene	3.8	0.03	0.2	ug/L	5.00	75.3	30-160	1.13	30		
Butylbenzylphthalate	3.9	0.07	0.2	ug/L	5.00	78.2	30-160	0.92	30		
Benzo(a)anthracene	4.4	0.04	0.2	ug/L	5.00	88.7	30-160	3.29	30		
3,3'-Dichlorobenzidine	8.8	0.3	1.0	ug/L	13.0	67.9	30-160	12.50	30		



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLF0094 - EPA 8270E

Instrument: NT17 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLF0094-BSD1)											
						Prepared: 07-Jun-2023	Analyzed: 14-Jun-2023 14:05				
Chrysene	4.2	0.04	0.2	ug/L	5.00		84.0	30-160	0.65	30	
bis(2-Ethylhexyl)phthalate	4.5	0.2	0.2	ug/L	5.00		90.4	30-160	2.53	30	
Di-n-Octylphthalate	4.6	0.05	0.2	ug/L	5.00		91.2	30-160	3.89	30	
Benzo(a)fluoranthene, Total	8.1	0.08	0.4	ug/L	10.0		81.3	30-160	0.49	30	
Benzo(a)pyrene	4.1	0.05	0.2	ug/L	5.00		82.4	30-160	0.01	30	
Indeno(1,2,3-cd)pyrene	4.4	0.06	0.2	ug/L	5.00		88.2	30-160	2.46	30	
Dibenzo(a,h)anthracene	4.4	0.07	0.2	ug/L	5.00		87.9	30-160	2.14	30	
Benzo(g,h,i)perylene	4.4	0.04	0.2	ug/L	5.00		87.8	30-160	4.50	30	
1-Methylnaphthalene	4.1	0.03	0.2	ug/L	5.00		81.2	30-160	5.49	30	
Surrogate: 2-Fluorophenol	2.88			ug/L	7.50		38.5	30-160			
Surrogate: Phenol-d5	2.00			ug/L	7.50		26.7	30-160			*
Surrogate: 2-Chlorophenol-d4	5.02			ug/L	7.50		66.9	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	2.76			ug/L	5.00		55.2	30-160			
Surrogate: Nitrobenzene-d5	4.03			ug/L	5.00		80.6	30-160			
Surrogate: 2-Fluorobiphenyl	3.69			ug/L	5.00		73.8	30-160			
Surrogate: 2,4,6-Tribromophenol	8.54			ug/L	7.50		114	30-160			Q
Surrogate: p-Terphenyl-d14	3.85			ug/L	5.00		77.0	30-160			
Matrix Spike (BLF0094-MS1)											
						Source: 23F0084-05	Prepared: 07-Jun-2023 Analyzed: 14-Jun-2023 14:44				
Phenol	1.4	0.01	0.2	ug/L	5.00	ND	28.5	30-160			*
bis(2-chloroethyl) ether	3.6	0.03	0.2	ug/L	5.00	ND	72.2	30-160			
2-Chlorophenol	3.1	0.03	0.2	ug/L	5.00	ND	62.4	30-160			
1,3-Dichlorobenzene	3.2	0.03	0.2	ug/L	5.00	ND	64.0	30-160			
1,4-Dichlorobenzene	3.6	0.03	0.2	ug/L	5.00	ND	71.8	30-160			
1,2-Dichlorobenzene	3.3	0.03	0.2	ug/L	5.00	ND	65.7	30-160			
Benzyl Alcohol	2.5	0.02	0.2	ug/L	5.00	ND	49.8	30-160			
2,2'-Oxybis(1-chloropropane)	4.3	0.03	0.2	ug/L	5.00	ND	85.5	30-160			
2-Methylphenol	2.6	0.03	0.2	ug/L	5.00	ND	52.6	30-160			
Hexachloroethane	3.1	0.04	0.2	ug/L	5.00	ND	62.3	30-160			
N-Nitroso-di-n-Propylamine	4.0	0.04	0.2	ug/L	5.00	ND	79.2	30-160			
4-Methylphenol	2.7	0.03	0.2	ug/L	5.00	ND	54.1	30-160			
Nitrobenzene	4.1	0.03	0.2	ug/L	5.00	ND	81.6	30-160			
Isophorone	4.6	0.03	0.2	ug/L	5.00	ND	91.7	30-160			
2-Nitrophenol	3.9	0.04	1.0	ug/L	5.00	ND	77.7	30-160			Q
2,4-Dimethylphenol	11.4	0.3	1.0	ug/L	13.0	ND	88.0	30-160			



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLF0094 - EPA 8270E

Instrument: NT17 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLF0094-MS1)											
Source: 23F0084-05 Prepared: 07-Jun-2023 Analyzed: 14-Jun-2023 14:44											
Bis(2-Chloroethoxy)methane	4.4	0.03	0.2	ug/L	5.00	ND	88.7	30-160			
2,4-Dichlorophenol	13.3	0.1	1.0	ug/L	13.0	ND	102	30-160			
1,2,4-Trichlorobenzene	3.8	0.03	0.2	ug/L	5.00	ND	76.1	30-160			
Naphthalene	3.6	0.03	0.2	ug/L	5.00	ND	72.8	30-160			
Benzoic acid	11.0	0.1	2.0	ug/L	23.0	ND	48.0	30-160			
4-Chloroaniline	5.7	0.04	1.0	ug/L	13.0	ND	43.8	30-160			
Hexachlorobutadiene	4.6	0.04	0.2	ug/L	5.00	ND	93.0	30-160			Q
4-Chloro-3-Methylphenol	13.0	0.1	1.0	ug/L	13.0	ND	100	30-160			
2-Methylnaphthalene	3.7	0.03	0.2	ug/L	5.00	ND	75.0	30-160			
Hexachlorocyclopentadiene	2.1	0.1	1.0	ug/L	13.0	ND	15.9	30-160			*, Q
2,4,6-Trichlorophenol	12.9	0.2	1.0	ug/L	13.0	ND	99.1	30-160			
2,4,5-Trichlorophenol	13.0	0.1	1.0	ug/L	13.0	ND	99.9	30-160			
2-Chloronaphthalene	3.9	0.03	0.2	ug/L	5.00	ND	78.9	30-160			
2-Nitroaniline	12.8	0.2	1.0	ug/L	13.0	ND	98.8	30-160			
Acenaphthylene	4.0	0.02	0.2	ug/L	5.00	ND	79.5	30-160			
Dimethylphthalate	4.6	0.04	0.2	ug/L	5.00	ND	92.8	30-160			
2,6-Dinitrotoluene	13.0	0.2	1.0	ug/L	13.0	ND	100	30-160			
Acenaphthene	4.0	0.03	0.2	ug/L	5.00	ND	79.6	30-160			
3-Nitroaniline	10.3	0.2	1.0	ug/L	13.0	ND	79.5	30-160			
2,4-Dinitrophenol	26.9	0.2	2.0	ug/L	23.0	ND	117	30-160			
Dibenzofuran	4.2	0.02	0.2	ug/L	5.00	ND	83.3	30-160			
4-Nitrophenol	6.4	0.06	1.0	ug/L	13.0	ND	48.8	30-160			Q
2,4-Dinitrotoluene	13.3	0.1	1.0	ug/L	13.0	ND	102	30-160			
Fluorene	4.5	0.02	0.2	ug/L	5.00	ND	90.9	30-160			
4-Chlorophenylphenyl ether	4.7	0.02	0.2	ug/L	5.00	ND	95.0	30-160			
Diethyl phthalate	4.9	0.06	0.2	ug/L	5.00	ND	97.7	30-160			
4-Nitroaniline	10.3	0.2	1.0	ug/L	13.0	ND	79.6	30-160			
4,6-Dinitro-2-methylphenol	24.0	0.4	2.0	ug/L	23.0	ND	104	30-160			
N-Nitrosodiphenylamine	4.1	0.03	0.2	ug/L	5.00	ND	81.4	30-160			
4-Bromophenyl phenyl ether	5.1	0.02	0.2	ug/L	5.00	ND	101	30-160			
Hexachlorobenzene	5.1	0.04	0.2	ug/L	5.00	ND	102	30-160			Q
Pentachlorophenol	15.0	0.1	1.0	ug/L	13.0	ND	115	30-160			
Phenanthrene	3.9	0.02	0.2	ug/L	5.00	ND	78.4	30-160			
Anthracene	3.8	0.03	0.2	ug/L	5.00	ND	75.8	30-160			
Carbazole	5.7	0.04	0.2	ug/L	5.00	ND	114	30-160			



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLF0094 - EPA 8270E

Instrument: NT17 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLF0094-MS1)											
Source: 23F0084-05 Prepared: 07-Jun-2023 Analyzed: 14-Jun-2023 14:44											
Di-n-Butylphthalate	4.4	0.05	0.2	ug/L	5.00	ND	88.7	30-160			
Fluoranthene	3.5	0.03	0.2	ug/L	5.00	ND	69.9	30-160			
Pyrene	3.4	0.03	0.2	ug/L	5.00	ND	68.4	30-160			
Butylbenzylphthalate	3.7	0.07	0.2	ug/L	5.00	ND	74.1	30-160			
Benzo(a)anthracene	4.3	0.04	0.2	ug/L	5.00	ND	85.7	30-160			
3,3'-Dichlorobenzidine	4.4	0.3	1.0	ug/L	13.0	ND	34.1	30-160			
Chrysene	3.9	0.04	0.2	ug/L	5.00	ND	78.5	30-160			
bis(2-Ethylhexyl)phthalate	4.1	0.2	0.2	ug/L	5.00	ND	82.9	30-160			
Di-n-Octylphthalate	4.3	0.05	0.2	ug/L	5.00	ND	85.6	30-160			
Benzo(a)fluoranthene, Total	7.9	0.08	0.4	ug/L	10.0	ND	78.9	30-160			
Benzo(a)pyrene	4.0	0.05	0.2	ug/L	5.00	ND	80.4	30-160			
Indeno(1,2,3-cd)pyrene	4.0	0.06	0.2	ug/L	5.00	ND	80.9	30-160			
Dibenzo(a,h)anthracene	4.1	0.07	0.2	ug/L	5.00	ND	82.0	30-160			
Benzo(g,h,i)perylene	4.0	0.04	0.2	ug/L	5.00	ND	79.6	30-160			
1-Methylnaphthalene	4.0	0.03	0.2	ug/L	5.00	ND	79.3	30-160			
Surrogate: 2-Fluorophenol	2.91			ug/L	7.50	2.99	38.8	30-160			
Surrogate: Phenol-d5	2.06			ug/L	7.50	1.81	27.5	30-160			*
Surrogate: 2-Chlorophenol-d4	5.90			ug/L	7.50	4.85	78.7	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	3.02			ug/L	5.00	2.82	60.4	30-160			
Surrogate: Nitrobenzene-d5	3.82			ug/L	5.00	4.04	76.4	30-160			
Surrogate: 2-Fluorobiphenyl	3.71			ug/L	5.00	3.79	74.2	30-160			
Surrogate: 2,4,6-Tribromophenol	8.28			ug/L	7.50	9.09	110	30-160			Q
Surrogate: p-Terphenyl-d14	3.72			ug/L	5.00	4.13	74.4	30-160			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLF0094-MSD1)											
Source: 23F0084-05 Prepared: 07-Jun-2023 Analyzed: 14-Jun-2023 15:22											
Phenol	1.3	0.01	0.2	ug/L	5.00	ND	26.5	30-160	7.18	30	*
bis(2-chloroethyl) ether	3.5	0.03	0.2	ug/L	5.00	ND	69.2	30-160	4.21	30	
2-Chlorophenol	3.4	0.03	0.2	ug/L	5.00	ND	67.2	30-160	7.37	30	
1,3-Dichlorobenzene	3.0	0.03	0.2	ug/L	5.00	ND	60.4	30-160	5.73	30	
1,4-Dichlorobenzene	3.5	0.03	0.2	ug/L	5.00	ND	69.4	30-160	3.43	30	
1,2-Dichlorobenzene	3.1	0.03	0.2	ug/L	5.00	ND	62.8	30-160	4.45	30	
Benzyl Alcohol	2.5	0.02	0.2	ug/L	5.00	ND	49.1	30-160	1.30	30	
2,2'-Oxybis(1-chloropropane)	4.1	0.03	0.2	ug/L	5.00	ND	81.9	30-160	4.35	30	



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Reported:
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Analysis by: Analytical Resources, LLC

Semivolatle Organic Compounds - Quality Control

Batch BLF0094 - EPA 8270E

Instrument: NT17 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLF0094-MSD1)											
Source: 23F0084-05			Prepared: 07-Jun-2023			Analyzed: 14-Jun-2023 15:22					
2-Methylphenol	2.9	0.03	0.2	ug/L	5.00	ND	58.7	30-160	10.90	30	
Hexachloroethane	2.9	0.04	0.2	ug/L	5.00	ND	57.7	30-160	7.61	30	
N-Nitroso-di-n-Propylamine	3.9	0.04	0.2	ug/L	5.00	ND	77.3	30-160	2.45	30	
4-Methylphenol	2.6	0.03	0.2	ug/L	5.00	ND	52.5	30-160	3.01	30	
Nitrobenzene	4.0	0.03	0.2	ug/L	5.00	ND	80.3	30-160	1.57	30	
Isophorone	4.4	0.03	0.2	ug/L	5.00	ND	88.1	30-160	4.02	30	
2-Nitrophenol	3.6	0.04	1.0	ug/L	5.00	ND	72.7	30-160	6.60	30	Q
2,4-Dimethylphenol	11.4	0.3	1.0	ug/L	13.0	ND	88.1	30-160	0.05	30	
Bis(2-Chloroethoxy)methane	4.4	0.03	0.2	ug/L	5.00	ND	88.0	30-160	0.75	30	
2,4-Dichlorophenol	13.2	0.1	1.0	ug/L	13.0	ND	102	30-160	0.47	30	
1,2,4-Trichlorobenzene	3.8	0.03	0.2	ug/L	5.00	ND	76.5	30-160	0.55	30	
Naphthalene	3.5	0.03	0.2	ug/L	5.00	ND	71.0	30-160	2.54	30	
Benzoic acid	10.6	0.1	2.0	ug/L	23.0	ND	46.3	30-160	3.57	30	
4-Chloroaniline	5.9	0.04	1.0	ug/L	13.0	ND	45.1	30-160	3.06	30	
Hexachlorobutadiene	4.5	0.04	0.2	ug/L	5.00	ND	89.9	30-160	3.39	30	Q
4-Chloro-3-Methylphenol	13.1	0.1	1.0	ug/L	13.0	ND	101	30-160	0.72	30	
2-Methylnaphthalene	3.7	0.03	0.2	ug/L	5.00	ND	74.0	30-160	1.39	30	
Hexachlorocyclopentadiene	2.1	0.1	1.0	ug/L	13.0	ND	15.9	30-160	0.44	30	*, Q
2,4,6-Trichlorophenol	12.8	0.2	1.0	ug/L	13.0	ND	98.5	30-160	0.66	30	
2,4,5-Trichlorophenol	12.9	0.1	1.0	ug/L	13.0	ND	99.5	30-160	0.34	30	
2-Chloronaphthalene	3.8	0.03	0.2	ug/L	5.00	ND	75.9	30-160	3.84	30	
2-Nitroaniline	12.7	0.2	1.0	ug/L	13.0	ND	97.4	30-160	1.49	30	
Acenaphthylene	3.9	0.02	0.2	ug/L	5.00	ND	78.1	30-160	1.79	30	
Dimethylphthalate	4.5	0.04	0.2	ug/L	5.00	ND	90.7	30-160	2.23	30	
2,6-Dinitrotoluene	12.7	0.2	1.0	ug/L	13.0	ND	97.3	30-160	2.68	30	
Acenaphthene	3.9	0.03	0.2	ug/L	5.00	ND	77.4	30-160	2.89	30	
3-Nitroaniline	10.1	0.2	1.0	ug/L	13.0	ND	78.0	30-160	1.83	30	
2,4-Dinitrophenol	26.8	0.2	2.0	ug/L	23.0	ND	117	30-160	0.29	30	
Dibenzofuran	4.0	0.02	0.2	ug/L	5.00	ND	80.7	30-160	3.06	30	
4-Nitrophenol	6.3	0.06	1.0	ug/L	13.0	ND	48.3	30-160	1.10	30	Q
2,4-Dinitrotoluene	13.2	0.1	1.0	ug/L	13.0	ND	101	30-160	0.78	30	
Fluorene	4.1	0.02	0.2	ug/L	5.00	ND	81.2	30-160	11.30	30	
4-Chlorophenylphenyl ether	4.6	0.02	0.2	ug/L	5.00	ND	92.5	30-160	2.61	30	
Diethyl phthalate	4.7	0.06	0.2	ug/L	5.00	ND	94.8	30-160	2.95	30	
4-Nitroaniline	10.0	0.2	1.0	ug/L	13.0	ND	76.9	30-160	3.42	30	



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - Quality Control

Batch BLF0094 - EPA 8270E

Instrument: NT17 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLF0094-MSD1)											
Source: 23F0084-05			Prepared: 07-Jun-2023			Analyzed: 14-Jun-2023 15:22					
4,6-Dinitro-2-methylphenol	23.9	0.4	2.0	ug/L	23.0	ND	104	30-160	0.37	30	
N-Nitrosodiphenylamine	4.1	0.03	0.2	ug/L	5.00	ND	81.9	30-160	0.58	30	
4-Bromophenyl phenyl ether	5.0	0.02	0.2	ug/L	5.00	ND	99.5	30-160	1.91	30	
Hexachlorobenzene	5.1	0.04	0.2	ug/L	5.00	ND	103	30-160	0.98	30	Q
Pentachlorophenol	14.8	0.1	1.0	ug/L	13.0	ND	114	30-160	1.65	30	
Phenanthrene	4.0	0.02	0.2	ug/L	5.00	ND	79.8	30-160	1.75	30	
Anthracene	3.6	0.03	0.2	ug/L	5.00	ND	72.5	30-160	4.39	30	
Carbazole	5.7	0.04	0.2	ug/L	5.00	ND	114	30-160	0.68	30	
Di-n-Butylphthalate	4.4	0.05	0.2	ug/L	5.00	ND	88.2	30-160	0.51	30	
Fluoranthene	3.5	0.03	0.2	ug/L	5.00	ND	69.4	30-160	0.71	30	
Pyrene	3.4	0.03	0.2	ug/L	5.00	ND	67.4	30-160	1.46	30	
Butylbenzylphthalate	3.6	0.07	0.2	ug/L	5.00	ND	71.1	30-160	4.18	30	
Benzo(a)anthracene	4.2	0.04	0.2	ug/L	5.00	ND	83.2	30-160	2.98	30	
3,3'-Dichlorobenzidine	5.8	0.3	1.0	ug/L	13.0	ND	44.4	30-160	26.30	30	
Chrysene	3.8	0.04	0.2	ug/L	5.00	ND	75.9	30-160	3.39	30	
bis(2-Ethylhexyl)phthalate	4.2	0.2	0.2	ug/L	5.00	ND	83.2	30-160	0.40	30	
Di-n-Octylphthalate	4.3	0.05	0.2	ug/L	5.00	ND	85.9	30-160	0.33	30	
Benzo(a)fluoranthene, Total	7.8	0.08	0.4	ug/L	10.0	ND	77.5	30-160	1.75	30	
Benzo(a)pyrene	4.0	0.05	0.2	ug/L	5.00	ND	79.0	30-160	1.71	30	
Indeno(1,2,3-cd)pyrene	4.0	0.06	0.2	ug/L	5.00	ND	79.8	30-160	1.35	30	
Dibenzo(a,h)anthracene	4.0	0.07	0.2	ug/L	5.00	ND	79.6	30-160	3.03	30	
Benzo(g,h,i)perylene	3.8	0.04	0.2	ug/L	5.00	ND	76.8	30-160	3.59	30	
1-Methylnaphthalene	3.8	0.03	0.2	ug/L	5.00	ND	75.9	30-160	4.36	30	
Surrogate: 2-Fluorophenol	2.79			ug/L	7.50	2.99	37.1	30-160			
Surrogate: Phenol-d5	1.97			ug/L	7.50	1.81	26.3	30-160			*
Surrogate: 2-Chlorophenol-d4	4.76			ug/L	7.50	4.85	63.4	30-160			
Surrogate: 1,2-Dichlorobenzene-d4	2.79			ug/L	5.00	2.82	55.9	30-160			
Surrogate: Nitrobenzene-d5	3.60			ug/L	5.00	4.04	72.1	30-160			
Surrogate: 2-Fluorobiphenyl	3.52			ug/L	5.00	3.79	70.4	30-160			
Surrogate: 2,4,6-Tribromophenol	8.25			ug/L	7.50	9.09	110	30-160			Q
Surrogate: p-Terphenyl-d14	3.54			ug/L	5.00	4.13	70.9	30-160			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLF0092 - EPA 8270E-SIM

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0092-BLK1)											
						Prepared: 07-Jun-2023 Analyzed: 20-Jun-2023 15:14					
Naphthalene	ND	0.006	0.010	ug/L							U
2-Methylnaphthalene	ND	0.007	0.010	ug/L							U
1-Methylnaphthalene	ND	0.008	0.010	ug/L							U
Acenaphthylene	ND	0.005	0.010	ug/L							U
Acenaphthene	ND	0.004	0.010	ug/L							U
Dibenzofuran	ND	0.006	0.010	ug/L							U
Fluorene	ND	0.004	0.010	ug/L							U
Phenanthrene	ND	0.005	0.010	ug/L							U
Anthracene	ND	0.005	0.010	ug/L							U
Carbazole	ND	0.005	0.010	ug/L							U
Fluoranthene	ND	0.006	0.010	ug/L							U
Pyrene	ND	0.008	0.010	ug/L							U
Benzo(a)anthracene	ND	0.006	0.010	ug/L							U
Chrysene	ND	0.008	0.010	ug/L							U
Benzo(b)fluoranthene	ND	0.005	0.010	ug/L							U
Benzo(k)fluoranthene	ND	0.008	0.010	ug/L							U
Benzo(j)fluoranthene	ND	0.005	0.010	ug/L							U
Benzofluoranthenes, Total	ND	0.017	0.020	ug/L							U
Benzo(a)pyrene	ND	0.005	0.010	ug/L							U
Perylene	ND	0.004	0.010	ug/L							U
Indeno(1,2,3-cd)pyrene	ND	0.008	0.010	ug/L							U
Dibenzo(a,h)anthracene	ND	0.008	0.010	ug/L							U
Benzo(g,h,i)perylene	ND	0.009	0.010	ug/L							U
Surrogate: 2-Methylnaphthalene-d10	0.152			ug/L	0.300		50.8	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.0719			ug/L	0.300		24.0	29-120			Q, *
Surrogate: Fluoranthene-d10	0.186			ug/L	0.300		62.0	57-120			

LCS (BLF0092-BS1)											
						Prepared: 07-Jun-2023 Analyzed: 20-Jun-2023 15:47					
Naphthalene	0.222	0.006	0.010	ug/L	0.300		73.9	37-120			
2-Methylnaphthalene	0.225	0.007	0.010	ug/L	0.300		75.0	37-120			
1-Methylnaphthalene	0.240	0.008	0.010	ug/L	0.300		80.1	29-120			
Acenaphthylene	0.253	0.005	0.010	ug/L	0.300		84.4	41-120			
Acenaphthene	0.237	0.004	0.010	ug/L	0.300		79.1	41-120			
Dibenzofuran	0.259	0.006	0.010	ug/L	0.300		86.4	38-120			
Fluorene	0.265	0.004	0.010	ug/L	0.300		88.5	43-120			



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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLF0092 - EPA 8270E-SIM

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLF0092-BS1)						Prepared: 07-Jun-2023 Analyzed: 20-Jun-2023 15:47					
Phenanthrene	0.272	0.005	0.010	ug/L	0.300		90.6	41-120			
Anthracene	0.263	0.005	0.010	ug/L	0.300		87.7	40-120			
Carbazole	0.308	0.005	0.010	ug/L	0.300		103	30-160			
Fluoranthene	0.276	0.006	0.010	ug/L	0.300		92.0	45-120			
Pyrene	0.272	0.008	0.010	ug/L	0.300		90.7	41-120			
Benzo(a)anthracene	0.286	0.006	0.010	ug/L	0.300		95.4	42-120			
Chrysene	0.279	0.008	0.010	ug/L	0.300		92.9	44-120			
Benzo(b)fluoranthene	0.262	0.005	0.010	ug/L	0.300		87.4	44-120			
Benzo(k)fluoranthene	0.278	0.008	0.010	ug/L	0.300		92.6	50-120			
Benzo(j)fluoranthene	0.359	0.005	0.010	ug/L	0.300		120	39-160			Q
Benzofluoranthenes, Total	0.899	0.017	0.020	ug/L	0.900		99.9	46-120			
Benzo(a)pyrene	0.227	0.005	0.010	ug/L	0.300		75.7	35-120			
Perylene	0.270	0.004	0.010	ug/L	0.300		89.9	30-160			
Indeno(1,2,3-cd)pyrene	0.173	0.008	0.010	ug/L	0.300		57.7	37-120			Q
Dibenzo(a,h)anthracene	0.159	0.008	0.010	ug/L	0.300		53.0	34-120			Q
Benzo(g,h,i)perylene	0.207	0.009	0.010	ug/L	0.300		68.9	38-120			Q
Surrogate: 2-Methylnaphthalene-d10	0.159			ug/L	0.300		52.9	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.0801			ug/L	0.300		26.7	29-120			* Q
Surrogate: Fluoranthene-d10	0.178			ug/L	0.300		59.3	57-120			
LCS Dup (BLF0092-BSD1)						Prepared: 07-Jun-2023 Analyzed: 20-Jun-2023 16:19					
Naphthalene	0.220	0.006	0.010	ug/L	0.300		73.2	37-120	0.82	30	
2-Methylnaphthalene	0.221	0.007	0.010	ug/L	0.300		73.6	37-120	1.80	30	
1-Methylnaphthalene	0.236	0.008	0.010	ug/L	0.300		78.6	29-120	1.87	30	
Acenaphthylene	0.245	0.005	0.010	ug/L	0.300		81.6	41-120	3.41	30	
Acenaphthene	0.229	0.004	0.010	ug/L	0.300		76.4	41-120	3.47	30	
Dibenzofuran	0.252	0.006	0.010	ug/L	0.300		84.1	38-120	2.66	30	
Fluorene	0.259	0.004	0.010	ug/L	0.300		86.3	43-120	2.50	30	
Phenanthrene	0.262	0.005	0.010	ug/L	0.300		87.5	41-120	3.47	30	
Anthracene	0.256	0.005	0.010	ug/L	0.300		85.3	40-120	2.79	30	
Carbazole	0.305	0.005	0.010	ug/L	0.300		102	30-160	1.05	30	
Fluoranthene	0.271	0.006	0.010	ug/L	0.300		90.4	45-120	1.73	30	
Pyrene	0.269	0.008	0.010	ug/L	0.300		89.6	41-120	1.25	30	
Benzo(a)anthracene	0.265	0.006	0.010	ug/L	0.300		88.2	42-120	7.87	30	
Chrysene	0.268	0.008	0.010	ug/L	0.300		89.5	44-120	3.79	30	



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLF0092 - EPA 8270E-SIM

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLF0092-BSD1)						Prepared: 07-Jun-2023 Analyzed: 20-Jun-2023 16:19					
Benzo(b)fluoranthene	0.251	0.005	0.010	ug/L	0.300		83.5	44-120	4.51	30	
Benzo(k)fluoranthene	0.264	0.008	0.010	ug/L	0.300		88.0	50-120	5.04	30	
Benzo(j)fluoranthene	0.349	0.005	0.010	ug/L	0.300		116	39-160	2.70	30	Q
Benzofluoranthenes, Total	0.864	0.017	0.020	ug/L	0.900		96.0	46-120	3.95	30	
Benzo(a)pyrene	0.216	0.005	0.010	ug/L	0.300		72.0	35-120	4.90	30	
Perylene	0.260	0.004	0.010	ug/L	0.300		86.7	30-160	3.61	30	
Indeno(1,2,3-cd)pyrene	0.158	0.008	0.010	ug/L	0.300		52.6	37-120	9.34	30	Q
Dibenzo(a,h)anthracene	0.143	0.008	0.010	ug/L	0.300		47.8	34-120	10.30	30	Q
Benzo(g,h,i)perylene	0.190	0.009	0.010	ug/L	0.300		63.4	38-120	8.39	30	Q
<i>Surrogate: 2-Methylnaphthalene-d10</i>	0.155			ug/L	0.300		51.7	42-120			
<i>Surrogate: Dibenzo[a,h]anthracene-d14</i>	0.0721			ug/L	0.300		24.0	29-120			*, Q
<i>Surrogate: Fluoranthene-d10</i>	0.174			ug/L	0.300		58.1	57-120			

Matrix Spike (BLF0092-MS1)				Source: 23F0084-05		Prepared: 07-Jun-2023 Analyzed: 20-Jun-2023 18:28					
Naphthalene	0.214	0.006	0.010	ug/L	0.300	ND	71.4	37-120			
2-Methylnaphthalene	0.218	0.007	0.010	ug/L	0.300	ND	72.8	37-120			
1-Methylnaphthalene	0.236	0.008	0.010	ug/L	0.300	ND	78.5	29-120			
Acenaphthylene	0.255	0.005	0.010	ug/L	0.300	ND	85.0	41-120			
Acenaphthene	0.233	0.004	0.010	ug/L	0.300	0.006	75.8	41-120			
Dibenzofuran	0.249	0.006	0.010	ug/L	0.300	ND	83.0	38-120			
Fluorene	0.265	0.004	0.010	ug/L	0.300	ND	88.4	43-120			
Phenanthrene	0.265	0.005	0.010	ug/L	0.300	ND	88.2	41-120			
Anthracene	0.259	0.005	0.010	ug/L	0.300	ND	86.2	40-120			
Carbazole	0.316	0.005	0.010	ug/L	0.300	ND	105	30-160			
Fluoranthene	0.281	0.006	0.010	ug/L	0.300	ND	93.7	45-120			
Pyrene	0.286	0.008	0.010	ug/L	0.300	ND	95.4	41-120			
Benzo(a)anthracene	0.283	0.006	0.010	ug/L	0.300	ND	94.5	42-120			
Chrysene	0.267	0.008	0.010	ug/L	0.300	ND	88.9	44-120			
Benzo(b)fluoranthene	0.244	0.005	0.010	ug/L	0.300	ND	81.4	44-120			
Benzo(k)fluoranthene	0.251	0.008	0.010	ug/L	0.300	ND	83.6	50-120			
Benzo(j)fluoranthene	0.316	0.005	0.010	ug/L	0.300	ND	105	39-160			Q
Benzofluoranthenes, Total	0.811	0.017	0.020	ug/L	0.900	ND	90.1	46-120			
Benzo(a)pyrene	0.200	0.005	0.010	ug/L	0.300	ND	66.7	35-120			
Perylene	0.237	0.004	0.010	ug/L	0.300	ND	79.1	30-160			
Indeno(1,2,3-cd)pyrene	0.146	0.008	0.010	ug/L	0.300	ND	48.7	37-120			Q



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLF0092 - EPA 8270E-SIM

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLF0092-MS1)		Source: 23F0084-05			Prepared: 07-Jun-2023		Analyzed: 20-Jun-2023 18:28				
Dibenzo(a,h)anthracene	0.135	0.008	0.010	ug/L	0.300	ND	45.1	34-120			Q
Benzo(g,h,i)perylene	0.177	0.009	0.010	ug/L	0.300	ND	59.2	38-120			Q
Surrogate: 2-Methylnaphthalene-d10	0.157			ug/L	0.300	0.159	52.5	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.0667			ug/L	0.300	0.0618	22.2	29-120			*, Q
Surrogate: Fluoranthene-d10	0.182			ug/L	0.300	0.187	60.8	57-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLF0092-MSD1)		Source: 23F0084-05			Prepared: 07-Jun-2023		Analyzed: 20-Jun-2023 19:00				
Naphthalene	0.215	0.006	0.010	ug/L	0.300	ND	71.8	37-120	0.50	30	
2-Methylnaphthalene	0.217	0.007	0.010	ug/L	0.300	ND	72.4	37-120	0.48	30	
1-Methylnaphthalene	0.233	0.008	0.010	ug/L	0.300	ND	77.7	29-120	1.01	30	
Acenaphthylene	0.253	0.005	0.010	ug/L	0.300	ND	84.2	41-120	1.00	30	
Acenaphthene	0.230	0.004	0.010	ug/L	0.300	0.006	74.8	41-120	1.20	30	
Dibenzofuran	0.248	0.006	0.010	ug/L	0.300	ND	82.8	38-120	0.27	30	
Fluorene	0.265	0.004	0.010	ug/L	0.300	ND	88.5	43-120	0.07	30	
Phenanthrene	0.265	0.005	0.010	ug/L	0.300	ND	88.3	41-120	0.10	30	
Anthracene	0.257	0.005	0.010	ug/L	0.300	ND	85.5	40-120	0.81	30	
Carbazole	0.329	0.005	0.010	ug/L	0.300	ND	110	30-160	3.90	30	
Fluoranthene	0.290	0.006	0.010	ug/L	0.300	ND	96.6	45-120	3.01	30	
Pyrene	0.297	0.008	0.010	ug/L	0.300	ND	99.2	41-120	3.83	30	
Benzo(a)anthracene	0.293	0.006	0.010	ug/L	0.300	ND	97.7	42-120	3.37	30	
Chrysene	0.273	0.008	0.010	ug/L	0.300	ND	91.0	44-120	2.23	30	
Benzo(b)fluoranthene	0.255	0.005	0.010	ug/L	0.300	ND	85.1	44-120	4.44	30	
Benzo(k)fluoranthene	0.257	0.008	0.010	ug/L	0.300	ND	85.7	50-120	2.53	30	
Benzo(j)fluoranthene	0.317	0.005	0.010	ug/L	0.300	ND	106	39-160	0.36	30	Q
Benzofluoranthenes, Total	0.829	0.017	0.020	ug/L	0.900	ND	92.1	46-120	2.27	30	
Benzo(a)pyrene	0.202	0.005	0.010	ug/L	0.300	ND	67.5	35-120	1.11	30	
Perylene	0.244	0.004	0.010	ug/L	0.300	ND	81.3	30-160	2.78	30	
Indeno(1,2,3-cd)pyrene	0.149	0.008	0.010	ug/L	0.300	ND	49.7	37-120	1.91	30	Q
Dibenzo(a,h)anthracene	0.136	0.008	0.010	ug/L	0.300	ND	45.2	34-120	0.24	30	Q
Benzo(g,h,i)perylene	0.181	0.009	0.010	ug/L	0.300	ND	60.4	38-120	2.00	30	Q
Surrogate: 2-Methylnaphthalene-d10	0.153			ug/L	0.300	0.159	51.1	42-120			
Surrogate: Dibenzo[a,h]anthracene-d14	0.0654			ug/L	0.300	0.0618	21.8	29-120			*, Q
Surrogate: Fluoranthene-d10	0.188			ug/L	0.300	0.187	62.7	57-120			



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 24-Jun-2023 11:52
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Analysis by: Analytical Resources, LLC

Semivolatile Organic Compounds - SIM - Quality Control

Batch BLF0092 - EPA 8270E-SIM

Instrument: NT18 Analyst: VTS

QC Sample/Analyte	Detection Result	Reporting Limit	Reporting Limit	Units	Spike Level	Source Result	%REC %REC	%REC Limits	RPD RPD	RPD Limit	Notes
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Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC.
710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Petroleum Hydrocarbons - Quality Control

Batch BLF0090 - NWTPH-Dx

Instrument: FID4 Analyst: AA

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0090-BLK1)		Prepared: 07-Jun-2023 Analyzed: 13-Jun-2023 13:24								
Diesel Range Organics (C12-C24)	ND	0.100	mg/L							U
Motor Oil Range Organics (C24-C38)	ND	0.200	mg/L							U
<i>Surrogate: o-Terphenyl</i>	0.198		mg/L	0.225		88.1	50-150			
LCS (BLF0090-BS1)		Prepared: 07-Jun-2023 Analyzed: 13-Jun-2023 13:44								
Diesel Range Organics (C12-C24)	1.97	0.100	mg/L	3.00		65.8	56-120			
<i>Surrogate: o-Terphenyl</i>	0.158		mg/L	0.225		70.2	50-150			
LCS Dup (BLF0090-BSD1)		Prepared: 07-Jun-2023 Analyzed: 13-Jun-2023 14:04								
Diesel Range Organics (C12-C24)	2.46	0.100	mg/L	3.00		81.8	56-120	21.80	30	
<i>Surrogate: o-Terphenyl</i>	0.197		mg/L	0.225		87.6	50-150			
Matrix Spike (BLF0090-MS1)		Source: 23F0084-05		Prepared: 07-Jun-2023 Analyzed: 13-Jun-2023 14:25						
Diesel Range Organics (C12-C24)	2.62	0.100	mg/L	3.00	ND	87.2	56-120			
<i>Surrogate: o-Terphenyl</i>	0.205		mg/L	0.225	0.205	91.1	50-150			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLF0090-MSD1)		Source: 23F0084-05		Prepared: 07-Jun-2023 Analyzed: 13-Jun-2023 14:45						
Diesel Range Organics (C12-C24)	2.69	0.100	mg/L	3.00	ND	89.7	56-120	2.83	30	
<i>Surrogate: o-Terphenyl</i>	0.212		mg/L	0.225	0.205	94.4	50-150			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BLF0093 - EPA 8082A

Instrument: ECD7 Analyst: RJL

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0093-BLK1)											
						Prepared: 07-Jun-2023 Analyzed: 20-Jun-2023 15:19					
Aroclor 1016	ND	0.002	0.010	ug/L							U
Aroclor 1221	ND	0.002	0.010	ug/L							U
Aroclor 1232	ND	0.002	0.010	ug/L							U
Aroclor 1242	ND	0.002	0.010	ug/L							U
Aroclor 1248	ND	0.002	0.010	ug/L							U
Aroclor 1254	ND	0.002	0.010	ug/L							U
Aroclor 1260	ND	0.003	0.010	ug/L							U
Aroclor 1262	ND	0.003	0.010	ug/L							U
Aroclor 1268	ND	0.003	0.010	ug/L							U
Surrogate: Decachlorobiphenyl	0.0137			ug/L	0.0200		68.4	29-120			
Surrogate: Tetrachlorometaxylene	0.0136			ug/L	0.0200		68.1	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0144			ug/L	0.0200		71.9	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0131			ug/L	0.0200		65.4	32-120			
LCS (BLF0093-BS1)											
						Prepared: 07-Jun-2023 Analyzed: 20-Jun-2023 15:40					
Aroclor 1016	0.036	0.002	0.010	ug/L	0.0500		72.3	54-120			
Aroclor 1260 [2C]	0.035	0.003	0.010	ug/L	0.0500		70.3	51-128			
Surrogate: Decachlorobiphenyl	0.0122			ug/L	0.0200		61.2	29-120			
Surrogate: Tetrachlorometaxylene	0.0112			ug/L	0.0200		56.2	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0129			ug/L	0.0200		64.5	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0111			ug/L	0.0200		55.5	32-120			
LCS Dup (BLF0093-BSD1)											
						Prepared: 07-Jun-2023 Analyzed: 20-Jun-2023 16:01					
Aroclor 1016	0.044	0.002	0.010	ug/L	0.0500		87.6	54-120	19.10	30	
Aroclor 1260 [2C]	0.040	0.003	0.010	ug/L	0.0500		79.8	51-128	12.70	30	
Surrogate: Decachlorobiphenyl	0.0138			ug/L	0.0200		69.0	29-120			
Surrogate: Tetrachlorometaxylene	0.0136			ug/L	0.0200		67.8	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0145			ug/L	0.0200		72.7	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0131			ug/L	0.0200		65.7	32-120			
Matrix Spike (BLF0093-MS1)											
			Source: 23F0084-05			Prepared: 07-Jun-2023 Analyzed: 20-Jun-2023 17:25					
Aroclor 1016	0.039	0.002	0.010	ug/L	0.0500	ND	78.0	54-120			
Aroclor 1260	0.031	0.003	0.010	ug/L	0.0500	ND	61.1	51-128			
Surrogate: Decachlorobiphenyl	0.00987			ug/L	0.0200		49.3	29-120			



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Analysis by: Analytical Resources, LLC

Aroclor PCB - Quality Control

Batch BLF0093 - EPA 8082A

Instrument: ECD7 Analyst: RJL

QC Sample/Analyte	Detection Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLF0093-MS1)		Source: 23F0084-05		Prepared: 07-Jun-2023		Analyzed: 20-Jun-2023 17:25				
Surrogate: Tetrachlorometaxylene	0.0127		ug/L	0.0200		63.7	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.00988		ug/L	0.0200		49.4	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0122		ug/L	0.0200		61.1	32-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLF0093-MSD1)		Source: 23F0084-05		Prepared: 07-Jun-2023		Analyzed: 20-Jun-2023 17:46				
Aroclor 1016	0.038	0.002	0.010	ug/L	0.0500	ND	76.0	54-120	1.95	30
Aroclor 1260	0.032	0.003	0.010	ug/L	0.0500	ND	64.5	51-128	5.37	30
Surrogate: Decachlorobiphenyl	0.0105		ug/L	0.0200		52.3	29-120			
Surrogate: Tetrachlorometaxylene	0.0127		ug/L	0.0200		63.4	32-120			
Surrogate: Decachlorobiphenyl [2C]	0.0101		ug/L	0.0200		50.6	29-120			
Surrogate: Tetrachlorometaxylene [2C]	0.0127		ug/L	0.0200		63.6	32-120			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Aspect Consulting, LLC. 710 2nd Avenue, Suite 550 Seattle WA, 98104	Project: West Duwamish CSO Project Number: 150218 Project Manager: Ali Cochrane	Reported: 24-Jun-2023 11:52
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLF0224 - EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0224-BLK1)						Prepared: 08-Jun-2023 Analyzed: 12-Jun-2023 11:17					
Mercury	ND	0.000013	0.000100	mg/L							U
LCS (BLF0224-BS1)						Prepared: 08-Jun-2023 Analyzed: 12-Jun-2023 11:19					
Mercury	0.00177	0.000013	0.000100	mg/L	0.00200		88.6	80-120			
Duplicate (BLF0224-DUP1)						Source: 23F0084-05 Prepared: 08-Jun-2023 Analyzed: 12-Jun-2023 11:24					
Mercury	ND	0.000013	0.000100	mg/L		ND					U
Matrix Spike (BLF0224-MS1)						Source: 23F0084-05 Prepared: 08-Jun-2023 Analyzed: 12-Jun-2023 11:26					
Mercury	0.000950	0.000013	0.000100	mg/L	0.00100	ND	95.0	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLF0224-MSD1)						Source: 23F0084-05 Prepared: 08-Jun-2023 Analyzed: 12-Jun-2023 11:29					
Mercury	0.00102	0.000013	0.000100	mg/L	0.00100	ND	102	75-125	6.84	20	
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLF0380 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0380-BLK1)						Prepared: 13-Jun-2023 Analyzed: 14-Jun-2023 19:08						
Antimony	121	ND	0.101	0.200	ug/L							U
Beryllium	9	ND	0.0171	0.200	ug/L							U
Chromium	52	ND	0.260	0.500	ug/L							U
Lead	208	ND	0.0513	0.100	ug/L							U
Silver	107	ND	0.0220	0.200	ug/L							U
Thallium	205	ND	0.0234	0.200	ug/L							U
Arsenic	75a	ND	0.0373	0.200	ug/L							U
Cadmium	111	ND	0.0300	0.100	ug/L							U
Copper	63	ND	0.173	0.500	ug/L							U
Nickel	60	ND	0.0792	0.500	ug/L							U
Selenium	78	ND	0.179	0.500	ug/L							U
Zinc	66	ND	2.92	6.00	ug/L							U

LCS (BLF0380-BS1)						Prepared: 13-Jun-2023 Analyzed: 14-Jun-2023 19:13						
Antimony	121	24.1	0.101	0.200	ug/L	25.0		96.4	80-120			
Beryllium	9	24.5	0.0171	0.200	ug/L	25.0		98.2	80-120			
Chromium	52	24.8	0.260	0.500	ug/L	25.0		99.4	80-120			
Lead	208	24.9	0.0513	0.100	ug/L	25.0		99.5	80-120			
Silver	107	24.6	0.0220	0.200	ug/L	25.0		98.2	80-120			
Thallium	205	25.1	0.0234	0.200	ug/L	25.0		100	80-120			
Arsenic	75a	24.6	0.0373	0.200	ug/L	25.0		98.2	80-120			
Cadmium	111	24.2	0.0300	0.100	ug/L	25.0		96.7	80-120			
Copper	63	28.2	0.173	0.500	ug/L	25.0		113	80-120			
Nickel	60	24.4	0.0792	0.500	ug/L	25.0		97.5	80-120			
Selenium	78	77.4	0.179	0.500	ug/L	80.0		96.7	80-120			
Zinc	66	82.2	2.92	6.00	ug/L	80.0		103	80-120			

Duplicate (BLF0380-DUP1)						Source: 23F0084-05		Prepared: 13-Jun-2023 Analyzed: 15-Jun-2023 00:03				
Antimony	121	ND	0.101	0.200	ug/L		ND					U
Beryllium	9	0.0250	0.0171	0.200	ug/L	0.0220				12.80	20	J
Lead	208	ND	0.0513	0.100	ug/L		ND					U
Silver	107	ND	0.0220	0.200	ug/L		ND					U
Thallium	205	ND	0.0234	0.200	ug/L		ND					U
Arsenic	75a	1.08	0.0373	0.200	ug/L	1.20				10.70	20	
Cadmium	111	ND	0.0300	0.100	ug/L		ND					U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLF0380 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BLF0380-DUP1)		Source: 23F0084-05			Prepared: 13-Jun-2023		Analyzed: 15-Jun-2023 00:03					
Copper	63	0.262	0.173	0.500	ug/L		0.301		75-125	13.90	20	J
Nickel	60	0.309	0.0792	0.500	ug/L		0.332		75-125	7.18	20	J
Selenium	78	1.02	0.179	0.500	ug/L		0.617		75-125	49.00	20	L
Zinc	66	ND	2.92	6.00	ug/L		ND		75-125			U

Duplicate (BLF0380-DUP2)		Source: 23F0084-05			Prepared: 13-Jun-2023		Analyzed: 16-Jun-2023 21:12					
Chromium	52	1.57	1.30	2.50	ug/L		1.67		75-125	6.49	20	J, D

Matrix Spike (BLF0380-MS1)		Source: 23F0084-05			Prepared: 13-Jun-2023		Analyzed: 15-Jun-2023 00:08					
Antimony	121	22.9	0.101	0.200	ug/L	25.0	ND	91.6	75-125			
Beryllium	9	19.2	0.0171	0.200	ug/L	25.0	0.0220	76.6	75-125			
Lead	208	22.2	0.0513	0.100	ug/L	25.0	ND	89.0	75-125			
Silver	107	21.0	0.0220	0.200	ug/L	25.0	ND	84.1	75-125			
Thallium	205	22.4	0.0234	0.200	ug/L	25.0	ND	89.4	75-125			
Arsenic	75a	23.9	0.0373	0.200	ug/L	25.0	1.20	90.8	75-125			
Cadmium	111	22.4	0.0300	0.100	ug/L	25.0	ND	89.7	75-125			
Copper	63	23.8	0.173	0.500	ug/L	25.0	0.301	94.1	75-125			
Nickel	60	24.2	0.0792	0.500	ug/L	25.0	0.332	95.3	75-125			
Selenium	78	68.2	0.179	0.500	ug/L	80.0	0.617	84.5	75-125			
Zinc	66	67.8	2.92	6.00	ug/L	80.0	ND	84.7	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BLF0380-MS2)		Source: 23F0084-05			Prepared: 13-Jun-2023		Analyzed: 16-Jun-2023 21:17					
Chromium	52	24.8	1.30	2.50	ug/L	25.0	1.67	92.5	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLF0380-MSD1)		Source: 23F0084-05			Prepared: 13-Jun-2023		Analyzed: 15-Jun-2023 00:15					
Antimony	121	23.0	0.101	0.200	ug/L	25.0	ND	91.8	75-125	0.21	20	
Beryllium	9	18.9	0.0171	0.200	ug/L	25.0	0.0220	75.4	75-125	1.51	20	
Lead	208	22.2	0.0513	0.100	ug/L	25.0	ND	88.6	75-125	0.38	20	
Silver	107	21.2	0.0220	0.200	ug/L	25.0	ND	84.9	75-125	0.96	20	
Thallium	205	22.1	0.0234	0.200	ug/L	25.0	ND	88.2	75-125	1.36	20	
Arsenic	75a	23.4	0.0373	0.200	ug/L	25.0	1.20	89.0	75-125	1.90	20	
Cadmium	111	22.1	0.0300	0.100	ug/L	25.0	ND	88.3	75-125	1.60	20	
Copper	63	23.7	0.173	0.500	ug/L	25.0	0.301	93.8	75-125	0.38	20	



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710 2nd Avenue, Suite 550
Seattle WA, 98104

Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLF0380 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLF0380-MSD1)		Source: 23F0084-05			Prepared: 13-Jun-2023		Analyzed: 15-Jun-2023 00:15					
Nickel	60	23.7	0.0792	0.500	ug/L	25.0	0.332	93.4	75-125	1.96	20	
Selenium	78	68.3	0.179	0.500	ug/L	80.0	0.617	84.6	75-125	0.16	20	
Zinc	66	66.1	2.92	6.00	ug/L	80.0	ND	82.7	75-125	2.45	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLF0380-MSD2)		Source: 23F0084-05			Prepared: 13-Jun-2023		Analyzed: 16-Jun-2023 21:22					
Chromium	52	24.5	1.30	2.50	ug/L	25.0	1.67	91.2	75-125	1.32	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Project: West Duwamish CSO
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Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLF0223 - EPA 7470A

Instrument: HYDRA Analyst: ML

QC Sample/Analyte	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0223-BLK1)						Prepared: 08-Jun-2023 Analyzed: 12-Jun-2023 10:51					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L							U
LCS (BLF0223-BS1)						Prepared: 08-Jun-2023 Analyzed: 12-Jun-2023 10:54					
Mercury, Dissolved	0.00179	0.000013	0.000100	mg/L	0.00200		89.6	80-120			
Duplicate (BLF0223-DUP1)						Source: 23F0084-06 Prepared: 08-Jun-2023 Analyzed: 12-Jun-2023 10:58					
Mercury, Dissolved	ND	0.000013	0.000100	mg/L		ND					U
Matrix Spike (BLF0223-MS1)						Source: 23F0084-06 Prepared: 08-Jun-2023 Analyzed: 12-Jun-2023 11:01					
Mercury, Dissolved	0.000932	0.000013	0.000100	mg/L	0.00100	ND	93.1	75-125			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLF0223-MSD1)						Source: 23F0084-06 Prepared: 08-Jun-2023 Analyzed: 12-Jun-2023 11:08					
Mercury, Dissolved	0.000896	0.000013	0.000100	mg/L	0.00100	ND	89.6	75-125	3.91	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLF0385 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLF0385-BLK1)						Prepared: 13-Jun-2023 Analyzed: 14-Jun-2023 20:17						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L							U
Beryllium, Dissolved	9	ND	0.0171	0.200	ug/L							U
Chromium, Dissolved	52	ND	0.260	0.500	ug/L							U
Lead, Dissolved	208	ND	0.0513	0.100	ug/L							U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L							U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L							U
Arsenic, Dissolved	75a	ND	0.0373	0.200	ug/L							U
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L							U
Copper, Dissolved	63	ND	0.173	0.500	ug/L							U
Nickel, Dissolved	60	ND	0.0792	0.500	ug/L							U
Selenium, Dissolved	78	ND	0.179	0.500	ug/L							U
Zinc, Dissolved	66	ND	2.92	6.00	ug/L							U

LCS (BLF0385-BS1)						Prepared: 13-Jun-2023 Analyzed: 14-Jun-2023 20:22						
Antimony, Dissolved	121	23.7	0.101	0.200	ug/L	25.0		94.7	80-120			
Beryllium, Dissolved	9	24.2	0.0171	0.200	ug/L	25.0		97.0	80-120			
Chromium, Dissolved	52	25.0	0.260	0.500	ug/L	25.0		100	80-120			
Lead, Dissolved	208	25.2	0.0513	0.100	ug/L	25.0		101	80-120			
Silver, Dissolved	107	24.2	0.0220	0.200	ug/L	25.0		96.9	80-120			
Thallium, Dissolved	205	25.0	0.0234	0.200	ug/L	25.0		99.8	80-120			
Arsenic, Dissolved	75a	24.4	0.0373	0.200	ug/L	25.0		97.5	80-120			
Cadmium, Dissolved	111	25.3	0.0300	0.100	ug/L	25.0		101	80-120			
Copper, Dissolved	63	26.5	0.173	0.500	ug/L	25.0		106	80-120			
Nickel, Dissolved	60	25.6	0.0792	0.500	ug/L	25.0		103	80-120			
Selenium, Dissolved	78	75.2	0.179	0.500	ug/L	80.0		94.0	80-120			
Zinc, Dissolved	66	82.4	2.92	6.00	ug/L	80.0		103	80-120			

Duplicate (BLF0385-DUP1)						Source: 23F0084-06 Prepared: 13-Jun-2023 Analyzed: 14-Jun-2023 22:59						
Antimony, Dissolved	121	ND	0.101	0.200	ug/L		ND					U
Beryllium, Dissolved	9	0.0220	0.0171	0.200	ug/L		0.0240			8.70	20	J
Lead, Dissolved	208	ND	0.0513	0.100	ug/L		ND					U
Silver, Dissolved	107	ND	0.0220	0.200	ug/L		ND					U
Thallium, Dissolved	205	ND	0.0234	0.200	ug/L		ND					U
Arsenic, Dissolved	75a	1.08	0.0373	0.200	ug/L		1.11			2.56	20	
Cadmium, Dissolved	111	ND	0.0300	0.100	ug/L		ND					U



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Project: West Duwamish CSO
Project Number: 150218
Project Manager: Ali Cochrane

Reported:
24-Jun-2023 11:52

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLF0385 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BLF0385-DUP1)		Source: 23F0084-06			Prepared: 13-Jun-2023		Analyzed: 14-Jun-2023 22:59					
Copper, Dissolved	63	ND	0.173	0.500	ug/L		ND					U
Nickel, Dissolved	60	0.228	0.0792	0.500	ug/L		0.257			12.00	20	J
Selenium, Dissolved	78	0.687	0.179	0.500	ug/L		0.498			31.90	20	L
Zinc, Dissolved	66	ND	2.92	6.00	ug/L		ND					U

Duplicate (BLF0385-DUP2)		Source: 23F0084-06			Prepared: 13-Jun-2023		Analyzed: 16-Jun-2023 01:37					
Chromium, Dissolved	52	1.06	0.520	1.00	ug/L		1.14			7.62	20	D

Matrix Spike (BLF0385-MS1)		Source: 23F0084-06			Prepared: 13-Jun-2023		Analyzed: 14-Jun-2023 23:05					
Antimony, Dissolved	121	23.3	0.101	0.200	ug/L	25.0	ND	93.2	75-125			
Beryllium, Dissolved	9	19.0	0.0171	0.200	ug/L	25.0	0.0240	75.9	75-125			
Lead, Dissolved	208	22.3	0.0513	0.100	ug/L	25.0	ND	89.1	75-125			
Silver, Dissolved	107	21.8	0.0220	0.200	ug/L	25.0	ND	87.3	75-125			
Thallium, Dissolved	205	22.0	0.0234	0.200	ug/L	25.0	ND	88.0	75-125			
Arsenic, Dissolved	75a	23.6	0.0373	0.200	ug/L	25.0	1.11	90.2	75-125			
Cadmium, Dissolved	111	22.1	0.0300	0.100	ug/L	25.0	ND	88.6	75-125			
Copper, Dissolved	63	22.9	0.173	0.500	ug/L	25.0	ND	91.6	75-125			
Nickel, Dissolved	60	23.3	0.0792	0.500	ug/L	25.0	0.257	92.0	75-125			
Selenium, Dissolved	78	68.6	0.179	0.500	ug/L	80.0	0.498	85.2	75-125			
Zinc, Dissolved	66	66.6	2.92	6.00	ug/L	80.0	ND	83.2	75-125			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike (BLF0385-MS2)		Source: 23F0084-06			Prepared: 13-Jun-2023		Analyzed: 16-Jun-2023 01:41					
Chromium, Dissolved	52	20.4	0.520	1.00	ug/L	25.0	1.14	76.9	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLF0385-MSD1)		Source: 23F0084-06			Prepared: 13-Jun-2023		Analyzed: 14-Jun-2023 23:11					
Antimony, Dissolved	121	21.4	0.101	0.200	ug/L	25.0	ND	85.6	75-125	8.58	20	
Beryllium, Dissolved	9	18.7	0.0171	0.200	ug/L	25.0	0.0240	74.9	75-125	1.38	20	*
Lead, Dissolved	208	22.4	0.0513	0.100	ug/L	25.0	ND	89.6	75-125	0.48	20	
Silver, Dissolved	107	21.8	0.0220	0.200	ug/L	25.0	ND	87.2	75-125	0.15	20	
Thallium, Dissolved	205	22.6	0.0234	0.200	ug/L	25.0	ND	90.4	75-125	2.74	20	
Arsenic, Dissolved	75a	23.8	0.0373	0.200	ug/L	25.0	1.11	90.6	75-125	0.46	20	
Cadmium, Dissolved	111	22.0	0.0300	0.100	ug/L	25.0	ND	88.0	75-125	0.61	20	
Copper, Dissolved	63	23.8	0.173	0.500	ug/L	25.0	ND	95.1	75-125	3.74	20	



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLF0385 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Detection Limit	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLF0385-MSD1)		Source: 23F0084-06			Prepared: 13-Jun-2023		Analyzed: 14-Jun-2023 23:11					
Nickel, Dissolved	60	24.1	0.0792	0.500	ug/L	25.0	0.257	95.6	75-125	3.72	20	
Selenium, Dissolved	78	68.8	0.179	0.500	ug/L	80.0	0.498	85.4	75-125	0.30	20	
Zinc, Dissolved	66	66.8	2.92	6.00	ug/L	80.0	ND	83.5	75-125	0.38	20	

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BLF0385-MSD2)		Source: 23F0084-06			Prepared: 13-Jun-2023		Analyzed: 16-Jun-2023 01:47					
Chromium, Dissolved	52	20.5	0.520	1.00	ug/L	25.0	1.14	77.5	75-125	0.75	20	D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



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Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Silver-107	DoD-ELAP,NELAP
Silver-107	WADOE,DoD-ELAP,NELAP
Beryllium-9	NELAP,WADOE,DoD-ELAP
Beryllium-9	WADOE,DoD-ELAP,NELAP
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
Antimony-121	NELAP,WADOE,DoD-ELAP
Thallium-205	WADOE,DoD-ELAP,NELAP
Thallium-205	NELAP,WADOE,DoD-ELAP
Silver-107	WADOE,DoD-ELAP,NELAP
Silver-107	DoD-ELAP,NELAP
Beryllium-9	NELAP,WADOE,DoD-ELAP
Beryllium-9	WADOE,DoD-ELAP,NELAP
Chromium-52	NELAP,WADOE,DoD-ELAP,ADEC
Lead-208	NELAP,WADOE,DoD-ELAP,ADEC
Antimony-121	NELAP,WADOE,DoD-ELAP
Thallium-205	NELAP,WADOE,DoD-ELAP
Thallium-205	WADOE,DoD-ELAP,NELAP
EPA 6020B UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
Arsenic-75a	WADOE,DoD-ELAP,ADEC,NELAP
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC
Copper-63	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP
Zinc-66	WADOE,DoD-ELAP
Zinc-66	NELAP,WADOE,DoD-ELAP
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
Arsenic-75a	WADOE,DoD-ELAP,ADEC,NELAP
Cadmium-111	NELAP,WADOE,DoD-ELAP,ADEC



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Copper-63	NELAP,WADOE,DoD-ELAP
Nickel-60	NELAP,WADOE,DoD-ELAP,ADEC
Selenium-78	NELAP,WADOE,DoD-ELAP
Zinc-66	NELAP,WADOE,DoD-ELAP
Zinc-66	WADOE,DoD-ELAP

EPA 7470A in Water

Mercury	WADOE,NELAP,DoD-ELAP
Mercury	WADOE,NELAP,DoD-ELAP

EPA 8082A in Water

Aroclor 1016	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1016 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1221 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1232 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1242 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1248 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1254 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1260 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1262 [2C]	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268	WADOE,DoD-ELAP,NELAP,ADEC
Aroclor 1268 [2C]	WADOE,DoD-ELAP,NELAP,ADEC

EPA 8260D in Water

Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE



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Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroeth	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE



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Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE



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Methyl tert-butyl Ether DoD-ELAP,ADEC,NELAP,WADOE
2-Pentanone WADOE

EPA 8270E in Water

Phenol	NELAP,DoD-ELAP
bis(2-chloroethyl) ether	NELAP,DoD-ELAP
2-Chlorophenol	NELAP,DoD-ELAP
1,3-Dichlorobenzene	NELAP,DoD-ELAP
1,4-Dichlorobenzene	NELAP,DoD-ELAP
1,2-Dichlorobenzene	NELAP,DoD-ELAP
Benzyl Alcohol	NELAP,DoD-ELAP
2,2'-Oxybis(1-chloropropane)	NELAP,DoD-ELAP
2-Methylphenol	NELAP,DoD-ELAP
Hexachloroethane	NELAP,DoD-ELAP
N-Nitroso-di-n-Propylamine	NELAP,DoD-ELAP
4-Methylphenol	NELAP,DoD-ELAP
Nitrobenzene	NELAP,DoD-ELAP
Isophorone	NELAP,DoD-ELAP
2-Nitrophenol	NELAP,DoD-ELAP
2,4-Dimethylphenol	NELAP,DoD-ELAP
Bis(2-Chloroethoxy)methane	NELAP,DoD-ELAP
2,4-Dichlorophenol	NELAP,DoD-ELAP
1,2,4-Trichlorobenzene	NELAP,DoD-ELAP
Naphthalene	NELAP,DoD-ELAP
Benzoic acid	NELAP,DoD-ELAP
4-Chloroaniline	NELAP,DoD-ELAP
Hexachlorobutadiene	NELAP,DoD-ELAP
4-Chloro-3-Methylphenol	NELAP,DoD-ELAP
2-Methylnaphthalene	NELAP,DoD-ELAP
Hexachlorocyclopentadiene	NELAP,DoD-ELAP
2,4,6-Trichlorophenol	NELAP,DoD-ELAP
2,4,5-Trichlorophenol	NELAP,DoD-ELAP
2-Chloronaphthalene	NELAP,DoD-ELAP
2-Nitroaniline	NELAP,DoD-ELAP



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Acenaphthylene	NELAP,DoD-ELAP
Dimethylphthalate	NELAP,DoD-ELAP
2,6-Dinitrotoluene	NELAP,DoD-ELAP
Acenaphthene	NELAP,DoD-ELAP
3-Nitroaniline	NELAP,DoD-ELAP
2,4-Dinitrophenol	NELAP,DoD-ELAP
Dibenzofuran	NELAP,DoD-ELAP
4-Nitrophenol	NELAP,DoD-ELAP
2,4-Dinitrotoluene	NELAP,DoD-ELAP
Fluorene	NELAP,DoD-ELAP
4-Chlorophenylphenyl ether	NELAP,DoD-ELAP
Diethyl phthalate	NELAP,DoD-ELAP
4-Nitroaniline	NELAP,DoD-ELAP
4,6-Dinitro-2-methylphenol	NELAP,DoD-ELAP
N-Nitrosodiphenylamine	NELAP,DoD-ELAP
4-Bromophenyl phenyl ether	NELAP,DoD-ELAP
Hexachlorobenzene	NELAP,DoD-ELAP
Pentachlorophenol	NELAP,DoD-ELAP
Phenanthrene	NELAP,DoD-ELAP
Anthracene	NELAP,DoD-ELAP
Carbazole	NELAP,DoD-ELAP
Di-n-Butylphthalate	NELAP,DoD-ELAP
Fluoranthene	NELAP,DoD-ELAP
Pyrene	NELAP,DoD-ELAP
Butylbenzylphthalate	NELAP,DoD-ELAP
Benzo(a)anthracene	NELAP,DoD-ELAP
3,3'-Dichlorobenzidine	NELAP,DoD-ELAP
Chrysene	NELAP,DoD-ELAP
bis(2-Ethylhexyl)phthalate	NELAP,DoD-ELAP
Di-n-Octylphthalate	NELAP,DoD-ELAP
Benzofluoranthenes, Total	NELAP
Benzo(a)pyrene	NELAP,DoD-ELAP
Indeno(1,2,3-cd)pyrene	NELAP,DoD-ELAP



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Dibenzo(a,h)anthracene	NELAP,DoD-ELAP
Benzo(g,h,i)perylene	NELAP,DoD-ELAP
1-Methylnaphthalene	NELAP,DoD-ELAP

EPA 8270E-SIM in Water

Naphthalene	ADEC,DoD-ELAP,NELAP,WADOE
2-Methylnaphthalene	ADEC,DoD-ELAP,NELAP
1-Methylnaphthalene	ADEC,DoD-ELAP,NELAP,WADOE
Acenaphthylene	ADEC,DoD-ELAP,NELAP,WADOE
Acenaphthene	ADEC,DoD-ELAP,NELAP,WADOE
Dibenzofuran	ADEC,DoD-ELAP,NELAP
Fluorene	ADEC,DoD-ELAP,NELAP,WADOE
Phenanthrene	ADEC,DoD-ELAP,NELAP,WADOE
Anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Carbazole	NELAP
Fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(a)anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Chrysene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(b)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(k)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(j)fluoranthene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(a)pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Perylene	ADEC,NELAP
Indeno(1,2,3-cd)pyrene	ADEC,DoD-ELAP,NELAP,WADOE
Dibenzo(a,h)anthracene	ADEC,DoD-ELAP,NELAP,WADOE
Benzo(g,h,i)perylene	ADEC,DoD-ELAP,NELAP,WADOE

NWTPH-Dx in Water

Diesel Range Organics (C12-C2)	DoD-ELAP,NELAP,WADOE
Motor Oil Range Organics (C24-	DoD-ELAP,NELAP,WADOE

NWTPHg in Water

Gasoline Range Organics (Tol-N	WADOE,DoD-ELAP
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Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



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Notes and Definitions

- * Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- D The reported value is from a dilution
- H Hold time violation - Hold time was exceeded.
- J Estimated concentration value detected below the reporting limit.
- L Analyte concentration is ≤ 5 times the reporting limit and the replicate control limit defaults to \pm RL instead of 20% RPD
- P1 The reported value is greater than 40% difference between the concentrations determined on two GC columns where applicable.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria ($< 20\%$ RSD, $< 20\%$ drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

July 11, 2017

Carla Brock
Aspect Consulting
401 2nd Avenue South, Suite 201
Seattle, WA 98104

Re: Analytical Data for Project 150218
Laboratory Reference No. 1706-353

Dear Carla:

Enclosed are the analytical results and associated quality control data for samples submitted on June 29, 2017.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

A handwritten signature in black ink, appearing to read "DB", with a long horizontal stroke extending to the right.

David Baumeister
Project Manager

Enclosures



OnSite Environmental, Inc. 14648 NE 95th Street, Redmond, WA 98052 (425) 883-3881

This report pertains to the samples analyzed in accordance with the chain of custody, and is intended only for the use of the individual or company to whom it is addressed.

Date of Report: July 11, 2017
Samples Submitted: June 29, 2017
Laboratory Reference: 1706-353
Project: 150218

Case Narrative

Samples were collected on June 27 and 28, 2017 and received by the laboratory on June 29, 2017. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

NWTPH Gx/BTEX (soil) Analysis

Per EPA Method 5035A, samples were received by the laboratory in pre-weighed 40 mL VOA vials within 48 hours of sample collection. They were stored in a freezer at between -7°C and -20°C until extraction or analysis.

Total Metals EPA 200.8/7470A Analysis

EB-1-062717 was taken from HCl preserved VOA vials. EB-2-062717, EB-3-062717, EB-4-062717, EB-5-062817 were taken from HCl preserved amber bottles.

Semivolatiles EPA 8270D/SIM Analysis

The RPD for 1,4-Dichlorobenze was outside of control limits for the MS/MSD. An SB/SBD extracted with this batch had all parameters in control for this analyte, indicating potential matrix interference. No further action was taken.

Please note that any other QA/QC issues associated with these extractions and analyses will be indicated with a footnote reference and discussed in detail on the Data Qualifier page.



Date of Report: July 11, 2017
 Samples Submitted: June 29, 2017
 Laboratory Reference: 1706-353
 Project: 150218

NWTPH-Gx/BTEX

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-1-7					
Laboratory ID:	06-353-02					
Benzene	ND	0.020	EPA 8021B	7-7-17	7-10-17	
Toluene	ND	0.048	EPA 8021B	7-7-17	7-10-17	
Ethyl Benzene	ND	0.048	EPA 8021B	7-7-17	7-10-17	
m,p-Xylene	ND	0.048	EPA 8021B	7-7-17	7-10-17	
o-Xylene	ND	0.048	EPA 8021B	7-7-17	7-10-17	
Gasoline	ND	4.8	NWTPH-Gx	7-7-17	7-10-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	84	63-124				
Client ID:	EB-2-8					
Laboratory ID:	06-353-09					
Benzene	ND	0.020	EPA 8021B	7-7-17	7-10-17	
Toluene	ND	0.044	EPA 8021B	7-7-17	7-10-17	
Ethyl Benzene	ND	0.044	EPA 8021B	7-7-17	7-10-17	
m,p-Xylene	ND	0.044	EPA 8021B	7-7-17	7-10-17	
o-Xylene	ND	0.044	EPA 8021B	7-7-17	7-10-17	
Gasoline	ND	4.4	NWTPH-Gx	7-7-17	7-10-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	108	63-124				
Client ID:	EB-3-7					
Laboratory ID:	06-353-15					
Benzene	ND	0.020	EPA 8021B	7-7-17	7-10-17	
Toluene	ND	0.065	EPA 8021B	7-7-17	7-10-17	
Ethyl Benzene	ND	0.065	EPA 8021B	7-7-17	7-10-17	
m,p-Xylene	ND	0.065	EPA 8021B	7-7-17	7-10-17	
o-Xylene	ND	0.065	EPA 8021B	7-7-17	7-10-17	
Gasoline	ND	6.5	NWTPH-Gx	7-7-17	7-10-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	95	63-124				



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 Project: 150218

NWTPH-Gx/BTEX

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-4-3					
Laboratory ID:	06-353-20					
Benzene	ND	0.020	EPA 8021B	7-7-17	7-10-17	
Toluene	ND	0.055	EPA 8021B	7-7-17	7-10-17	
Ethyl Benzene	ND	0.055	EPA 8021B	7-7-17	7-10-17	
m,p-Xylene	ND	0.055	EPA 8021B	7-7-17	7-10-17	
o-Xylene	ND	0.055	EPA 8021B	7-7-17	7-10-17	
Gasoline	ND	5.5	NWTPH-Gx	7-7-17	7-10-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	99	63-124				
Client ID:	EB-5-6					
Laboratory ID:	06-353-27					
Benzene	ND	0.020	EPA 8021B	7-7-17	7-10-17	
Toluene	ND	0.043	EPA 8021B	7-7-17	7-10-17	
Ethyl Benzene	ND	0.043	EPA 8021B	7-7-17	7-10-17	
m,p-Xylene	ND	0.043	EPA 8021B	7-7-17	7-10-17	
o-Xylene	ND	0.043	EPA 8021B	7-7-17	7-10-17	
Gasoline	ND	4.3	NWTPH-Gx	7-7-17	7-10-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	93	63-124				



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**NWTPH-Gx/BTEX
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0707S1					
Benzene	ND	0.020	EPA 8021B	7-7-17	7-10-17	
Toluene	ND	0.050	EPA 8021B	7-7-17	7-10-17	
Ethyl Benzene	ND	0.050	EPA 8021B	7-7-17	7-10-17	
m,p-Xylene	ND	0.050	EPA 8021B	7-7-17	7-10-17	
o-Xylene	ND	0.050	EPA 8021B	7-7-17	7-10-17	
Gasoline	ND	5.0	NWTPH-Gx	7-7-17	7-10-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	110	63-124				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	06-353-15							
	ORIG	DUP						
Benzene	ND	ND	NA	NA	NA	NA	30	
Toluene	ND	ND	NA	NA	NA	NA	30	
Ethyl Benzene	ND	ND	NA	NA	NA	NA	30	
m,p-Xylene	ND	ND	NA	NA	NA	NA	30	
o-Xylene	ND	ND	NA	NA	NA	NA	30	
Gasoline	ND	ND	NA	NA	NA	NA	30	
<i>Surrogate:</i>								
<i>Fluorobenzene</i>				95	91	63-124		

SPIKE BLANKS

Laboratory ID:	SB0707S1								
	SB	SBD	SB	SBD	SB	SBD			
Benzene	0.839	0.867	1.00	1.00	84	87	70-124	3	12
Toluene	0.881	0.894	1.00	1.00	88	89	73-119	1	12
Ethyl Benzene	0.863	0.890	1.00	1.00	86	89	74-117	3	12
m,p-Xylene	0.920	0.915	1.00	1.00	92	92	75-117	1	13
o-Xylene	0.886	0.905	1.00	1.00	89	91	75-116	2	12
<i>Surrogate:</i>									
<i>Fluorobenzene</i>					84	88	63-124		



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NWTPH-Gx/BTEX

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-1-062717					
Laboratory ID:	06-353-32					
Benzene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Toluene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Ethyl Benzene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
m,p-Xylene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
o-Xylene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Gasoline	ND	100	NWTPH-Gx	7-6-17	7-6-17	

Surrogate: *Percent Recovery* *Control Limits*
Fluorobenzene 86 61-118

Client ID:	EB-2-062717					
Laboratory ID:	06-353-33					
Benzene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Toluene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Ethyl Benzene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
m,p-Xylene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
o-Xylene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Gasoline	ND	100	NWTPH-Gx	7-6-17	7-6-17	

Surrogate: *Percent Recovery* *Control Limits*
Fluorobenzene 83 61-118

Client ID:	EB-3-062717					
Laboratory ID:	06-353-34					
Benzene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Toluene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Ethyl Benzene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
m,p-Xylene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
o-Xylene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Gasoline	ND	100	NWTPH-Gx	7-6-17	7-6-17	

Surrogate: *Percent Recovery* *Control Limits*
Fluorobenzene 83 61-118



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 Project: 150218

NWTPH-Gx/BTEX

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-4-062717					
Laboratory ID:	06-353-35					
Benzene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Toluene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Ethyl Benzene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
m,p-Xylene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
o-Xylene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Gasoline	ND	100	NWTPH-Gx	7-6-17	7-6-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	86	61-118				

Client ID:	EB-5-062817					
Laboratory ID:	06-353-36					
Benzene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Toluene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Ethyl Benzene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
m,p-Xylene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
o-Xylene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Gasoline	ND	100	NWTPH-Gx	7-6-17	7-6-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	83	61-118				



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 Project: 150218

**NWTPH-Gx/BTEX
 QUALITY CONTROL**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0706W1					
Benzene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Toluene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Ethyl Benzene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
m,p-Xylene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
o-Xylene	ND	1.0	EPA 8021B	7-6-17	7-6-17	
Gasoline	ND	100	NWTPH-Gx	7-6-17	7-6-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>Fluorobenzene</i>	83	61-118				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	06-353-32							
	ORIG	DUP						
Benzene	ND	ND	NA	NA	NA	NA	NA	30
Toluene	ND	ND	NA	NA	NA	NA	NA	30
Ethyl Benzene	ND	ND	NA	NA	NA	NA	NA	30
m,p-Xylene	ND	ND	NA	NA	NA	NA	NA	30
o-Xylene	ND	ND	NA	NA	NA	NA	NA	30
Gasoline	ND	ND	NA	NA	NA	NA	NA	30
<i>Surrogate:</i>								
<i>Fluorobenzene</i>				86	85	61-118		

SPIKE BLANKS

Laboratory ID:	SB0706W1								
	SB	SBD	SB	SBD	SB	SBD			
Benzene	49.5	49.0	50.0	50.0	99	98	79-120	1	11
Toluene	49.4	48.5	50.0	50.0	99	97	79-118	2	12
Ethyl Benzene	49.0	47.8	50.0	50.0	98	96	80-117	2	12
m,p-Xylene	49.0	48.0	50.0	50.0	98	96	80-117	2	12
o-Xylene	48.7	47.9	50.0	50.0	97	96	80-116	2	11
<i>Surrogate:</i>									
<i>Fluorobenzene</i>					95	88	61-118		



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NWTPH-Dx

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-1-7					
Laboratory ID:	06-353-02					
Diesel Range Organics	ND	30	NWTPH-Dx	7-5-17	7-6-17	
Lube Oil Range Organics	ND	61	NWTPH-Dx	7-5-17	7-6-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	89	50-150				
Client ID:	EB-2-8					
Laboratory ID:	06-353-09					
Diesel Range Organics	ND	27	NWTPH-Dx	7-5-17	7-6-17	
Lube Oil Range Organics	ND	53	NWTPH-Dx	7-5-17	7-6-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	88	50-150				
Client ID:	EB-3-7					
Laboratory ID:	06-353-15					
Diesel Range Organics	ND	34	NWTPH-Dx	7-5-17	7-6-17	
Lube Oil Range Organics	120	69	NWTPH-Dx	7-5-17	7-6-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	84	50-150				
Client ID:	EB-4-3					
Laboratory ID:	06-353-20					
Diesel Range Organics	ND	33	NWTPH-Dx	7-5-17	7-6-17	
Lube Oil Range Organics	ND	67	NWTPH-Dx	7-5-17	7-6-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	87	50-150				
Client ID:	EB-5-6					
Laboratory ID:	06-353-27					
Diesel Range Organics	ND	29	NWTPH-Dx	7-5-17	7-6-17	
Lube Oil Range Organics	ND	57	NWTPH-Dx	7-5-17	7-6-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	82	50-150				



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**NWTPH-Dx
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0705S4					
Diesel Range Organics	ND	25	NWTPH-Dx	7-5-17	7-6-17	
Lube Oil Range Organics	ND	50	NWTPH-Dx	7-5-17	7-6-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	96	50-150				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	07-001-07							
	ORIG	DUP						
Diesel Range	ND	ND	NA	NA	NA	NA	NA	NA
Lube Oil Range	ND	ND	NA	NA	NA	NA	NA	NA
<i>Surrogate:</i>								
<i>o-Terphenyl</i>			108	93	50-150			



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NWTPH-Dx

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-1-062717					
Laboratory ID:	06-353-32					
Diesel Range Organics	ND	0.27	NWTPH-Dx	7-3-17	7-3-17	
Lube Oil Range Organics	ND	0.44	NWTPH-Dx	7-3-17	7-3-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	93	50-150				
Client ID:	EB-2-062717					
Laboratory ID:	06-353-33					
Diesel Range Organics	ND	0.28	NWTPH-Dx	7-3-17	7-3-17	
Lube Oil Range Organics	ND	0.44	NWTPH-Dx	7-3-17	7-3-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	97	50-150				
Client ID:	EB-3-062717					
Laboratory ID:	06-353-34					
Diesel Range Organics	ND	0.28	NWTPH-Dx	7-3-17	7-3-17	
Lube Oil Range Organics	ND	0.44	NWTPH-Dx	7-3-17	7-3-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	94	50-150				
Client ID:	EB-4-062717					
Laboratory ID:	06-353-35					
Diesel Range Organics	ND	0.28	NWTPH-Dx	7-3-17	7-3-17	
Lube Oil Range Organics	ND	0.44	NWTPH-Dx	7-3-17	7-3-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	91	50-150				
Client ID:	EB-5-062817					
Laboratory ID:	06-353-36					
Diesel Range Organics	ND	0.29	NWTPH-Dx	7-3-17	7-6-17	
Lube Oil Range Organics	ND	0.46	NWTPH-Dx	7-3-17	7-6-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	88	50-150				



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**NWTPH-Dx
 QUALITY CONTROL**

Matrix: Water
 Units: mg/L (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0703W1					
Diesel Range Organics	ND	0.25	NWTPH-Dx	7-3-17	7-3-17	
Lube Oil Range Organics	ND	0.40	NWTPH-Dx	7-3-17	7-3-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>o-Terphenyl</i>	78	50-150				

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	06-353-32							
	ORIG	DUP						
Diesel Range	ND	ND	NA	NA	NA	NA	NA	NA
Lube Oil Range	ND	ND	NA	NA	NA	NA	NA	NA
<i>Surrogate:</i>								
<i>o-Terphenyl</i>				93	87	50-150		



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PAHs + PCP EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-1-7					
Laboratory ID:	06-353-02					
Naphthalene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
2-Methylnaphthalene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
1-Methylnaphthalene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Acenaphthylene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Acenaphthene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Fluorene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Pentachlorophenol	ND	0.20	EPA 8270D	7-6-17	7-7-17	
Phenanthrene	0.015	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Anthracene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Fluoranthene	0.0099	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Pyrene	0.018	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[a]anthracene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Chrysene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[b]fluoranthene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo(j,k)fluoranthene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[a]pyrene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Indeno[1,2,3-cd]pyrene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Dibenz[a,h]anthracene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[g,h,i]perylene	ND	0.0081	EPA 8270D/SIM	7-6-17	7-7-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>2-Fluorophenol</i>	<i>44</i>	<i>18 - 109</i>				
<i>Phenol-d6</i>	<i>48</i>	<i>25 - 111</i>				
<i>Nitrobenzene-d5</i>	<i>41</i>	<i>22 - 113</i>				
<i>2-Fluorobiphenyl</i>	<i>48</i>	<i>30 - 114</i>				
<i>2,4,6-Tribromophenol</i>	<i>70</i>	<i>22 - 116</i>				
<i>Terphenyl-d14</i>	<i>65</i>	<i>33 - 114</i>				



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 Laboratory Reference: 1706-353
 Project: 150218

PAHs + PCP EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-2-8					
Laboratory ID:	06-353-09					
Naphthalene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
2-Methylnaphthalene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
1-Methylnaphthalene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Acenaphthylene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Acenaphthene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Fluorene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Pentachlorophenol	ND	0.18	EPA 8270D	7-6-17	7-7-17	
Phenanthrene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Anthracene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Fluoranthene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Pyrene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[a]anthracene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Chrysene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[b]fluoranthene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo(j,k)fluoranthene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[a]pyrene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Indeno[1,2,3-cd]pyrene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Dibenz[a,h]anthracene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[g,h,i]perylene	ND	0.0071	EPA 8270D/SIM	7-6-17	7-7-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>2-Fluorophenol</i>	<i>78</i>	<i>18 - 109</i>				
<i>Phenol-d6</i>	<i>81</i>	<i>25 - 111</i>				
<i>Nitrobenzene-d5</i>	<i>71</i>	<i>22 - 113</i>				
<i>2-Fluorobiphenyl</i>	<i>65</i>	<i>30 - 114</i>				
<i>2,4,6-Tribromophenol</i>	<i>71</i>	<i>22 - 116</i>				
<i>Terphenyl-d14</i>	<i>65</i>	<i>33 - 114</i>				



Date of Report: July 11, 2017
 Samples Submitted: June 29, 2017
 Laboratory Reference: 1706-353
 Project: 150218

PAHs + PCP EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-3-7					
Laboratory ID:	06-353-15					
Naphthalene	0.019	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
2-Methylnaphthalene	0.016	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
1-Methylnaphthalene	0.017	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Acenaphthylene	ND	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Acenaphthene	ND	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Fluorene	ND	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Pentachlorophenol	ND	0.23	EPA 8270D	7-6-17	7-7-17	
Phenanthrene	0.028	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Anthracene	ND	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Fluoranthene	0.032	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Pyrene	0.029	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[a]anthracene	ND	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Chrysene	0.0092	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[b]fluoranthene	ND	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo(j,k)fluoranthene	ND	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[a]pyrene	ND	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Indeno[1,2,3-cd]pyrene	ND	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Dibenz[a,h]anthracene	ND	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[g,h,i]perylene	ND	0.0091	EPA 8270D/SIM	7-6-17	7-7-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>2-Fluorophenol</i>	<i>76</i>	<i>18 - 109</i>				
<i>Phenol-d6</i>	<i>82</i>	<i>25 - 111</i>				
<i>Nitrobenzene-d5</i>	<i>75</i>	<i>22 - 113</i>				
<i>2-Fluorobiphenyl</i>	<i>73</i>	<i>30 - 114</i>				
<i>2,4,6-Tribromophenol</i>	<i>85</i>	<i>22 - 116</i>				
<i>Terphenyl-d14</i>	<i>78</i>	<i>33 - 114</i>				



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PAHs + PCP EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-4-3					
Laboratory ID:	06-353-20					
Naphthalene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
2-Methylnaphthalene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
1-Methylnaphthalene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Acenaphthylene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Acenaphthene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Fluorene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Pentachlorophenol	ND	0.22	EPA 8270D	7-6-17	7-7-17	
Phenanthrene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Anthracene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Fluoranthene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Pyrene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[a]anthracene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Chrysene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[b]fluoranthene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo(j,k)fluoranthene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[a]pyrene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Indeno[1,2,3-cd]pyrene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Dibenz[a,h]anthracene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[g,h,i]perylene	ND	0.0089	EPA 8270D/SIM	7-6-17	7-7-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>2-Fluorophenol</i>	<i>76</i>	<i>18 - 109</i>				
<i>Phenol-d6</i>	<i>80</i>	<i>25 - 111</i>				
<i>Nitrobenzene-d5</i>	<i>66</i>	<i>22 - 113</i>				
<i>2-Fluorobiphenyl</i>	<i>62</i>	<i>30 - 114</i>				
<i>2,4,6-Tribromophenol</i>	<i>66</i>	<i>22 - 116</i>				
<i>Terphenyl-d14</i>	<i>62</i>	<i>33 - 114</i>				



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 Laboratory Reference: 1706-353
 Project: 150218

PAHs + PCP EPA 8270D/SIM

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-5-6					
Laboratory ID:	06-353-27					
Naphthalene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
2-Methylnaphthalene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
1-Methylnaphthalene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Acenaphthylene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Acenaphthene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Fluorene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Pentachlorophenol	ND	0.19	EPA 8270D	7-6-17	7-7-17	
Phenanthrene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Anthracene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Fluoranthene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Pyrene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[a]anthracene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Chrysene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[b]fluoranthene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo(j,k)fluoranthene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[a]pyrene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Indeno[1,2,3-cd]pyrene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Dibenz[a,h]anthracene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[g,h,i]perylene	ND	0.0076	EPA 8270D/SIM	7-6-17	7-7-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>2-Fluorophenol</i>	<i>66</i>	<i>18 - 109</i>				
<i>Phenol-d6</i>	<i>70</i>	<i>25 - 111</i>				
<i>Nitrobenzene-d5</i>	<i>61</i>	<i>22 - 113</i>				
<i>2-Fluorobiphenyl</i>	<i>58</i>	<i>30 - 114</i>				
<i>2,4,6-Tribromophenol</i>	<i>64</i>	<i>22 - 116</i>				
<i>Terphenyl-d14</i>	<i>59</i>	<i>33 - 114</i>				



Date of Report: July 11, 2017
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 Laboratory Reference: 1706-353
 Project: 150218

**PAHs + PCP EPA 8270D/SIM
 METHOD BLANK QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Laboratory ID:	MB0706S2					
Naphthalene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
2-Methylnaphthalene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
1-Methylnaphthalene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Acenaphthylene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Acenaphthene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Fluorene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Pentachlorophenol	ND	0.17	EPA 8270D	7-6-17	7-7-17	
Phenanthrene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Anthracene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Fluoranthene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Pyrene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[a]anthracene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Chrysene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[b]fluoranthene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo(j,k)fluoranthene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[a]pyrene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Indeno[1,2,3-cd]pyrene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Dibenz[a,h]anthracene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
Benzo[g,h,i]perylene	ND	0.0067	EPA 8270D/SIM	7-6-17	7-7-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
<i>2-Fluorophenol</i>	<i>75</i>	<i>18 - 109</i>				
<i>Phenol-d6</i>	<i>78</i>	<i>25 - 111</i>				
<i>Nitrobenzene-d5</i>	<i>68</i>	<i>22 - 113</i>				
<i>2-Fluorobiphenyl</i>	<i>64</i>	<i>30 - 114</i>				
<i>2,4,6-Tribromophenol</i>	<i>77</i>	<i>22 - 116</i>				
<i>Terphenyl-d14</i>	<i>65</i>	<i>33 - 114</i>				



Date of Report: July 11, 2017
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 Laboratory Reference: 1706-353
 Project: 150218

**PAHs + PCP EPA 8270D/SIM
 MS/MSD QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg

Analyte	Result		Spike Level		Source	Percent		Recovery	RPD	RPD	Flags
	MS	MSD	MS	MSD	Result	Recovery	Limits	RPD	Limit		
MATRIX SPIKES											
Laboratory ID:	06-353-27										
	MS	MSD	MS	MSD		MS	MSD				
Phenol	1.04	0.916	1.33	1.33	ND	78	69	25 - 99	13	36	
2-Chlorophenol	0.927	0.743	1.33	1.33	ND	70	56	21 - 104	22	38	
1,4-Dichlorobenzene	0.426	0.278	0.667	0.667	ND	64	42	20 - 110	42	40	L
n-Nitroso-di-n-propylamine	0.508	0.465	0.667	0.667	ND	76	70	24 - 100	9	38	
1,2,4-Trichlorobenzene	0.409	0.327	0.667	0.667	ND	61	49	21 - 110	22	40	
4-Chloro-3-methylphenol	0.995	1.02	1.33	1.33	ND	75	77	26 - 109	2	29	
Acenaphthene	0.422	0.440	0.667	0.667	ND	63	66	33 - 99	4	30	
4-Nitrophenol	1.03	1.02	1.33	1.33	ND	77	77	21 - 107	1	29	
2,4-Dinitrotoluene	0.450	0.461	0.667	0.667	ND	67	69	20 - 106	2	30	
Pentachlorophenol	0.839	0.869	1.33	1.33	ND	63	65	20 - 113	4	31	
Pyrene	0.453	0.467	0.667	0.667	ND	68	70	24 - 115	3	28	
<i>Surrogate:</i>											
2-Fluorophenol						84	61	18 - 109			
Phenol-d6						86	77	25 - 111			
Nitrobenzene-d5						74	64	22 - 113			
2-Fluorobiphenyl						71	69	30 - 114			
2,4,6-Tribromophenol						85	85	22 - 116			
Terphenyl-d14						75	76	33 - 114			



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PCBs
EPA 8082A

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-1-7					
Laboratory ID:	06-353-02					
Aroclor 1016	ND	0.061	EPA 8082A	7-7-17	7-11-17	
Aroclor 1221	ND	0.061	EPA 8082A	7-7-17	7-11-17	
Aroclor 1232	ND	0.061	EPA 8082A	7-7-17	7-11-17	
Aroclor 1242	ND	0.061	EPA 8082A	7-7-17	7-11-17	
Aroclor 1248	ND	0.061	EPA 8082A	7-7-17	7-11-17	
Aroclor 1254	ND	0.061	EPA 8082A	7-7-17	7-11-17	
Aroclor 1260	ND	0.061	EPA 8082A	7-7-17	7-11-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
DCB	88	42-139				
Client ID:	EB-2-8					
Laboratory ID:	06-353-09					
Aroclor 1016	ND	0.053	EPA 8082A	7-7-17	7-11-17	
Aroclor 1221	ND	0.053	EPA 8082A	7-7-17	7-11-17	
Aroclor 1232	ND	0.053	EPA 8082A	7-7-17	7-11-17	
Aroclor 1242	ND	0.053	EPA 8082A	7-7-17	7-11-17	
Aroclor 1248	ND	0.053	EPA 8082A	7-7-17	7-11-17	
Aroclor 1254	ND	0.053	EPA 8082A	7-7-17	7-11-17	
Aroclor 1260	ND	0.053	EPA 8082A	7-7-17	7-11-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
DCB	90	42-139				
Client ID:	EB-3-7					
Laboratory ID:	06-353-15					
Aroclor 1016	ND	0.068	EPA 8082A	7-7-17	7-11-17	
Aroclor 1221	ND	0.068	EPA 8082A	7-7-17	7-11-17	
Aroclor 1232	ND	0.068	EPA 8082A	7-7-17	7-11-17	
Aroclor 1242	ND	0.068	EPA 8082A	7-7-17	7-11-17	
Aroclor 1248	ND	0.068	EPA 8082A	7-7-17	7-11-17	
Aroclor 1254	ND	0.068	EPA 8082A	7-7-17	7-11-17	
Aroclor 1260	ND	0.068	EPA 8082A	7-7-17	7-11-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
DCB	87	42-139				



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 Project: 150218

PCBs
EPA 8082A

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	EB-4-3					
Laboratory ID:	06-353-20					
Aroclor 1016	ND	0.067	EPA 8082A	7-7-17	7-11-17	
Aroclor 1221	ND	0.067	EPA 8082A	7-7-17	7-11-17	
Aroclor 1232	ND	0.067	EPA 8082A	7-7-17	7-11-17	
Aroclor 1242	ND	0.067	EPA 8082A	7-7-17	7-11-17	
Aroclor 1248	ND	0.067	EPA 8082A	7-7-17	7-11-17	
Aroclor 1254	ND	0.067	EPA 8082A	7-7-17	7-11-17	
Aroclor 1260	ND	0.067	EPA 8082A	7-7-17	7-11-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
DCB	96	42-139				
Client ID:	EB-5-6					
Laboratory ID:	06-353-27					
Aroclor 1016	ND	0.057	EPA 8082A	7-7-17	7-10-17	
Aroclor 1221	ND	0.057	EPA 8082A	7-7-17	7-10-17	
Aroclor 1232	ND	0.057	EPA 8082A	7-7-17	7-10-17	
Aroclor 1242	ND	0.057	EPA 8082A	7-7-17	7-10-17	
Aroclor 1248	ND	0.057	EPA 8082A	7-7-17	7-10-17	
Aroclor 1254	ND	0.057	EPA 8082A	7-7-17	7-10-17	
Aroclor 1260	ND	0.057	EPA 8082A	7-7-17	7-10-17	
<i>Surrogate:</i>	<i>Percent Recovery</i>	<i>Control Limits</i>				
DCB	94	42-139				



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**PCBs EPA 8082A
 QUALITY CONTROL**

Matrix: Soil
 Units: mg/Kg (ppm)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0707S1					
Aroclor 1016	ND	0.050	EPA 8082A	7-7-17	7-7-17	
Aroclor 1221	ND	0.050	EPA 8082A	7-7-17	7-7-17	
Aroclor 1232	ND	0.050	EPA 8082A	7-7-17	7-7-17	
Aroclor 1242	ND	0.050	EPA 8082A	7-7-17	7-7-17	
Aroclor 1248	ND	0.050	EPA 8082A	7-7-17	7-7-17	
Aroclor 1254	ND	0.050	EPA 8082A	7-7-17	7-7-17	
Aroclor 1260	ND	0.050	EPA 8082A	7-7-17	7-7-17	
Surrogate:	Percent Recovery		Control Limits			
DCB	80		42-139			

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
MATRIX SPIKES											
Laboratory ID:	06-353-02										
	MS	MSD	MS	MSD		MS	MSD				
Aroclor 1260	0.513	0.531	0.500	0.500	ND	103	106	26-127	3	22	
Surrogate:											
DCB						92	94	42-139			



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TOTAL METALS
EPA 6010C/6020A/7471B

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-353-02					
Client ID:	EB-1-7					
Antimony	ND	6.1	6010C	7-7-17	7-7-17	
Arsenic	ND	12	6010C	7-7-17	7-7-17	
Beryllium	ND	0.61	6010C	7-7-17	7-7-17	
Cadmium	ND	0.61	6010C	7-7-17	7-7-17	
Chromium	16	0.61	6010C	7-7-17	7-7-17	
Copper	15	1.2	6010C	7-7-17	7-7-17	
Lead	ND	6.1	6010C	7-7-17	7-7-17	
Mercury	ND	0.30	7471B	7-7-17	7-7-17	
Nickel	10	3.0	6010C	7-7-17	7-7-17	
Selenium	ND	12	6010C	7-7-17	7-7-17	
Silver	ND	3.0	6010C	7-7-17	7-7-17	
Thallium	ND	1.2	6020A	7-7-17	7-7-17	
Zinc	31	3.0	6010C	7-7-17	7-7-17	



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TOTAL METALS
EPA 6010C/6020A/7471B

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-353-09					
Client ID:	EB-2-8					
Antimony	ND	5.3	6010C	7-7-17	7-7-17	
Arsenic	ND	11	6010C	7-7-17	7-7-17	
Beryllium	ND	0.53	6010C	7-7-17	7-7-17	
Cadmium	ND	0.53	6010C	7-7-17	7-7-17	
Chromium	14	0.53	6010C	7-7-17	7-7-17	
Copper	8.3	1.1	6010C	7-7-17	7-7-17	
Lead	ND	5.3	6010C	7-7-17	7-7-17	
Mercury	ND	0.27	7471B	7-7-17	7-7-17	
Nickel	6.2	2.7	6010C	7-7-17	7-7-17	
Selenium	ND	11	6010C	7-7-17	7-7-17	
Silver	ND	2.7	6010C	7-7-17	7-7-17	
Thallium	ND	1.1	6020A	7-7-17	7-7-17	
Zinc	23	2.7	6010C	7-7-17	7-7-17	



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TOTAL METALS
EPA 6010C/6020A/7471B

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-353-15					
Client ID:	EB-3-7					
Antimony	ND	6.8	6010C	7-7-17	7-7-17	
Arsenic	ND	14	6010C	7-7-17	7-7-17	
Beryllium	ND	0.68	6010C	7-7-17	7-7-17	
Cadmium	ND	0.68	6010C	7-7-17	7-7-17	
Chromium	16	0.68	6010C	7-7-17	7-7-17	
Copper	19	1.4	6010C	7-7-17	7-7-17	
Lead	ND	6.8	6010C	7-7-17	7-7-17	
Mercury	ND	0.34	7471B	7-7-17	7-7-17	
Nickel	25	3.4	6010C	7-7-17	7-7-17	
Selenium	ND	14	6010C	7-7-17	7-7-17	
Silver	ND	3.4	6010C	7-7-17	7-7-17	
Thallium	ND	1.4	6020A	7-7-17	7-7-17	
Zinc	34	3.4	6010C	7-7-17	7-7-17	



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TOTAL METALS
EPA 6010C/6020A/7471B

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-353-20					
Client ID:	EB-4-3					
Antimony	ND	6.7	6010C	7-7-17	7-7-17	
Arsenic	ND	13	6010C	7-7-17	7-7-17	
Beryllium	ND	0.67	6010C	7-7-17	7-7-17	
Cadmium	ND	0.67	6010C	7-7-17	7-7-17	
Chromium	63	0.67	6010C	7-7-17	7-7-17	
Copper	36	1.3	6010C	7-7-17	7-7-17	
Lead	ND	6.7	6010C	7-7-17	7-7-17	
Mercury	ND	0.33	7471B	7-7-17	7-7-17	
Nickel	72	3.3	6010C	7-7-17	7-7-17	
Selenium	ND	13	6010C	7-7-17	7-7-17	
Silver	ND	3.3	6010C	7-7-17	7-7-17	
Thallium	ND	1.3	6020A	7-7-17	7-7-17	
Zinc	74	3.3	6010C	7-7-17	7-7-17	



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TOTAL METALS
EPA 6010C/6020A/7471B

Matrix: Soil
 Units: mg/kg (ppm)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-353-27					
Client ID:	EB-5-6					
Antimony	ND	5.7	6010C	7-7-17	7-7-17	
Arsenic	ND	11	6010C	7-7-17	7-7-17	
Beryllium	ND	0.57	6010C	7-7-17	7-7-17	
Cadmium	ND	0.57	6010C	7-7-17	7-7-17	
Chromium	14	0.57	6010C	7-7-17	7-7-17	
Copper	8.1	1.1	6010C	7-7-17	7-7-17	
Lead	ND	5.7	6010C	7-7-17	7-7-17	
Mercury	ND	0.28	7471B	7-7-17	7-7-17	
Nickel	6.5	2.8	6010C	7-7-17	7-7-17	
Selenium	ND	11	6010C	7-7-17	7-7-17	
Silver	ND	2.8	6010C	7-7-17	7-7-17	
Thallium	ND	1.1	6020A	7-7-17	7-7-17	
Zinc	22	2.8	6010C	7-7-17	7-7-17	



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**TOTAL METALS
 EPA 6010C/6020A
 METHOD BLANK QUALITY CONTROL**

Date Extracted: 7-7-17
 Date Analyzed: 7-7-17
 Matrix: Solid
 Units: mg/kg (ppm)
 Lab ID: MB0707SH1

Analyte	Method	Result	PQL
Antimony	6010C	ND	5.0
Arsenic	6010C	ND	10
Beryllium	6010C	ND	0.50
Cadmium	6010C	ND	0.50
Chromium	6010C	ND	0.50
Copper	6010C	ND	1.0
Lead	6010C	ND	5.0
Nickel	6010C	ND	2.5
Selenium	6010C	ND	10
Silver	6010C	ND	1.0
Thallium	6020A	ND	2.5
Zinc	6010C	ND	2.5



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**TOTAL MERCURY
EPA 7471B
METHOD BLANK QUALITY CONTROL**

Date Extracted: 7-7-17
Date Analyzed: 7-7-17

Matrix: Solid
Units: mg/kg (ppm)

Lab ID: MB0707S1

Analyte	Method	Result	PQL
Mercury	7471B	ND	0.25



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**TOTAL METALS
 EPA 6010C/6020A
 DUPLICATE QUALITY CONTROL**

Date Extracted: 7-7-17

Date Analyzed: 7-7-17

Matrix: Solid

Units: mg/kg (ppm)

Lab ID: 06-353-09

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	ND	ND	NA	5.0	
Arsenic	ND	ND	NA	10	
Beryllium	ND	ND	NA	0.50	
Cadmium	ND	ND	NA	0.50	
Chromium	12.8	12.7	0	0.50	
Copper	7.85	7.90	1	1.0	
Lead	ND	ND	NA	5.0	
Nickel	5.85	6.25	7	2.5	
Selenium	ND	ND	NA	10	
Silver	ND	ND	NA	1.0	
Thallium	ND	ND	NA	2.5	
Zinc	21.6	21.1	2	2.5	



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**TOTAL MERCURY
EPA 7471B
DUPLICATE QUALITY CONTROL**

Date Extracted: 7-7-17

Date Analyzed: 7-7-17

Matrix: Solid

Units: mg/kg (ppm)

Lab ID: 07-036-05

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Mercury	0.314	0.289	8	0.25	



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**TOTAL METALS
 EPA 6010C/6020A
 MS/MSD QUALITY CONTROL**

Date Extracted: 7-7-17

Date Analyzed: 7-7-17

Matrix: Solid

Units: mg/kg (ppm)

Lab ID: 06-353-09

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	500	432	86	432	86	0	
Arsenic	100	100	100	97.8	98	2	
Beryllium	50.0	46.9	94	46.6	93	1	
Cadmium	50.0	45.8	92	45.5	91	1	
Chromium	100	103	90	102	89	1	
Copper	50.0	54.9	94	54.4	93	1	
Lead	250	224	90	224	90	0	
Nickel	100	97.9	92	97.1	91	1	
Selenium	100	96.1	96	90.8	91	6	
Silver	25.0	22.6	90	22.3	89	1	
Thallium	50.0	47.5	95	48.8	98	3	
Zinc	100	115	94	114	92	1	



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**TOTAL MERCURY
 EPA 7471B
 MS/MSD QUALITY CONTROL**

Date Extracted: 7-7-17

Date Analyzed: 7-7-17

Matrix: Solid

Units: mg/kg (ppm)

Lab ID: 07-036-05

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Mercury	0.500	0.873	112	0.801	97	9	



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**TOTAL METALS
 EPA 6010C/6020A
 SPIKE BLANK QUALITY CONTROL**

Date Extracted: 7-7-17

Date Analyzed: 7-7-17

Matrix: Solid

Units: mg/kg (ppm)

Lab ID: SB0707SH1

Analyte	Method	Spike Level	SB Result	Percent Recovery
Antimony	6010C	500	457	91
Arsenic	6010C	100	99.1	99
Beryllium	6010C	500	50.5	101
Cadmium	6010C	50.0	48.9	98
Chromium	6010C	100	98.4	98
Copper	6010C	50.0	52.1	104
Lead	6010C	250	243	97
Nickel	6010C	100	102	102
Selenium	6010C	100	104	104
Silver	6010C	25.0	25.4	101
Thallium	6020A	50.0	49.5	99
Zinc	6010C	100	102	102



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**TOTAL MERCURY
EPA 7471B
SPIKE BLANK QUALITY CONTROL**

Date Extracted: 7-7-17

Date Analyzed: 7-7-17

Matrix: Solid

Units: mg/kg (ppm)

Lab ID: SB0707S1

Analyte	Method	Spike Level	SB Result	Percent Recovery
Mercury	7471B	0.500	0.521	104



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 Project: 150218

**TOTAL METALS
 EPA 200.8/7470A**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-353-32					
Client ID:	EB-1-062717					
Antimony	ND	5.6	200.8	7-6-17	7-6-17	
Arsenic	28	3.3	200.8	7-6-17	7-6-17	
Beryllium	ND	11	200.8	7-6-17	7-6-17	
Cadmium	ND	4.4	200.8	7-6-17	7-6-17	
Chromium	150	11	200.8	7-6-17	7-6-17	
Copper	150	11	200.8	7-6-17	7-6-17	
Lead	45	1.1	200.8	7-6-17	7-6-17	
Mercury	ND	0.50	7470A	7-6-17	7-6-17	
Nickel	69	22	200.8	7-6-17	7-6-17	
Selenium	ND	5.6	200.8	7-6-17	7-6-17	
Silver	ND	11	200.8	7-6-17	7-6-17	
Thallium	ND	5.6	200.8	7-6-17	7-6-17	
Zinc	240	28	200.8	7-6-17	7-6-17	



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 Project: 150218

**TOTAL METALS
 EPA 200.8/7470A**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-353-33					
Client ID:	EB-2-062717					
Antimony	ND	5.6	200.8	7-6-17	7-6-17	
Arsenic	5.4	3.3	200.8	7-6-17	7-6-17	
Beryllium	ND	11	200.8	7-6-17	7-6-17	
Cadmium	ND	4.4	200.8	7-6-17	7-6-17	
Chromium	18	11	200.8	7-6-17	7-6-17	
Copper	29	11	200.8	7-6-17	7-6-17	
Lead	4.7	1.1	200.8	7-6-17	7-6-17	
Mercury	ND	0.50	7470A	7-6-17	7-6-17	
Nickel	ND	22	200.8	7-6-17	7-6-17	
Selenium	ND	5.6	200.8	7-6-17	7-6-17	
Silver	ND	11	200.8	7-6-17	7-6-17	
Thallium	ND	5.6	200.8	7-6-17	7-6-17	
Zinc	36	28	200.8	7-6-17	7-6-17	



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**TOTAL METALS
 EPA 200.8/7470A**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-353-34					
Client ID:	EB-3-062717					
Antimony	ND	5.6	200.8	7-6-17	7-6-17	
Arsenic	ND	3.3	200.8	7-6-17	7-6-17	
Beryllium	ND	11	200.8	7-6-17	7-6-17	
Cadmium	ND	4.4	200.8	7-6-17	7-6-17	
Chromium	14	11	200.8	7-6-17	7-6-17	
Copper	19	11	200.8	7-6-17	7-6-17	
Lead	2.3	1.1	200.8	7-6-17	7-6-17	
Mercury	ND	0.50	7470A	7-6-17	7-6-17	
Nickel	ND	22	200.8	7-6-17	7-6-17	
Selenium	ND	5.6	200.8	7-6-17	7-6-17	
Silver	ND	11	200.8	7-6-17	7-6-17	
Thallium	ND	5.6	200.8	7-6-17	7-6-17	
Zinc	ND	28	200.8	7-6-17	7-6-17	



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**TOTAL METALS
 EPA 200.8/7470A**

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-353-35					
Client ID:	EB-4-062717					
Antimony	ND	5.6	200.8	7-6-17	7-6-17	
Arsenic	5.6	3.3	200.8	7-6-17	7-6-17	
Beryllium	ND	11	200.8	7-6-17	7-6-17	
Cadmium	ND	4.4	200.8	7-6-17	7-6-17	
Chromium	24	11	200.8	7-6-17	7-6-17	
Copper	34	11	200.8	7-6-17	7-6-17	
Lead	3.8	1.1	200.8	7-6-17	7-6-17	
Mercury	ND	0.50	7470A	7-6-17	7-6-17	
Nickel	ND	22	200.8	7-6-17	7-6-17	
Selenium	ND	5.6	200.8	7-6-17	7-6-17	
Silver	ND	11	200.8	7-6-17	7-6-17	
Thallium	ND	5.6	200.8	7-6-17	7-6-17	
Zinc	28	28	200.8	7-6-17	7-6-17	



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TOTAL METALS
EPA 200.8/7470A

Matrix: Water
 Units: ug/L (ppb)

Analyte	Result	PQL	EPA Method	Date Prepared	Date Analyzed	Flags
Lab ID:	06-353-36					
Client ID:	EB-5-062817					
Antimony	ND	5.6	200.8	7-6-17	7-6-17	
Arsenic	ND	3.3	200.8	7-6-17	7-6-17	
Beryllium	ND	11	200.8	7-6-17	7-6-17	
Cadmium	ND	4.4	200.8	7-6-17	7-6-17	
Chromium	21	11	200.8	7-6-17	7-6-17	
Copper	35	11	200.8	7-6-17	7-6-17	
Lead	4.1	1.1	200.8	7-6-17	7-6-17	
Mercury	ND	0.50	7470A	7-6-17	7-6-17	
Nickel	ND	22	200.8	7-6-17	7-6-17	
Selenium	ND	5.6	200.8	7-6-17	7-6-17	
Silver	ND	11	200.8	7-6-17	7-6-17	
Thallium	ND	5.6	200.8	7-6-17	7-6-17	
Zinc	44	28	200.8	7-6-17	7-6-17	



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**TOTAL METALS
 EPA 200.8/7470A
 METHOD BLANK QUALITY CONTROL**

Date Extracted: 7-6-17
 Date Analyzed: 7-6-17

 Matrix: Water
 Units: ug/L (ppb)

 Lab ID: MB0706W1&MB0706WM1

Analyte	Method	Result	PQL
Antimony	200.8	ND	5.6
Arsenic	200.8	ND	3.3
Beryllium	200.8	ND	11
Cadmium	200.8	ND	4.4
Chromium	200.8	ND	11
Copper	200.8	ND	11
Lead	200.8	ND	1.1
Mercury	7470A	ND	0.50
Nickel	200.8	ND	22
Selenium	200.8	ND	5.6
Silver	200.8	ND	11
Thallium	200.8	ND	5.6
Zinc	200.8	ND	28



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**TOTAL METALS
 EPA 200.8/7470A
 DUPLICATE QUALITY CONTROL**

Date Extracted: 7-6-17

Date Analyzed: 7-6-17

Matrix: Water

Units: ug/L (ppb)

Lab ID: 07-021-01

Analyte	Sample Result	Duplicate Result	RPD	PQL	Flags
Antimony	ND	ND	NA	5.6	
Arsenic	ND	ND	NA	3.3	
Beryllium	ND	ND	NA	11	
Cadmium	ND	ND	NA	4.4	
Chromium	ND	ND	NA	11	
Copper	ND	ND	NA	11	
Lead	ND	ND	NA	1.1	
Mercury	ND	ND	NA	0.50	
Nickel	ND	ND	NA	22	
Selenium	ND	ND	NA	5.6	
Silver	ND	ND	NA	11	
Thallium	ND	ND	NA	5.6	
Zinc	ND	ND	NA	28	



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**TOTAL METALS
 EPA 200.8/7470A
 MS/MSD QUALITY CONTROL**

Date Extracted: 7-6-17

Date Analyzed: 7-6-17

Matrix: Water

Units: ug/L (ppb)

Lab ID: 07-021-01

Analyte	Spike Level	MS	Percent Recovery	MSD	Percent Recovery	RPD	Flags
Antimony	222	232	105	224	101	3	
Arsenic	222	232	104	218	98	6	
Beryllium	222	244	110	230	104	6	
Cadmium	222	227	102	217	98	5	
Chromium	222	218	98	206	93	6	
Copper	222	207	93	192	87	8	
Lead	222	214	97	203	92	5	
Mercury	12.5	12.0	96	11.8	94	2	
Nickel	222	216	97	200	90	8	
Selenium	222	244	110	233	105	5	
Silver	222	213	96	206	93	3	
Thallium	222	213	96	197	89	8	
Zinc	222	232	105	217	98	7	



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**TOTAL METALS
 EPA 200.8/7470A
 SPIKE BLANK QUALITY CONTROL**

Date Extracted: 7-6-17

Date Analyzed: 7-6-17

Matrix: Water

Units: ug/L (ppb)

Lab ID: SB0706W1&SB0706WM1

Analyte	Method	Spike Level	SB Result	Percent Recovery
Antimony	200.8	222	237	107
Arsenic	200.8	222	238	107
Beryllium	200.8	222	248	112
Cadmium	200.8	222	232	104
Chromium	200.8	222	217	98
Copper	200.8	222	211	95
Lead	200.8	222	221	99
Mercury	7470A	12.5	12.1	97
Nickel	200.8	222	211	95
Selenium	200.8	222	245	110
Silver	200.8	222	221	100
Thallium	200.8	222	216	97
Zinc	200.8	222	235	106



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% MOISTURE

Date Analyzed: 7-5-17

Client ID	Lab ID	% Moisture
EB-1-7	06-353-02	18
EB-2-8	06-353-09	6
EB-3-7	06-353-15	27
EB-4-3	06-353-20	25
EB-5-6	06-353-27	12





Data Qualifiers and Abbreviations

- A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.
 - B - The analyte indicated was also found in the blank sample.
 - C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.
 - E - The value reported exceeds the quantitation range and is an estimate.
 - F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.
 - H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.
 - I - Compound recovery is outside of the control limits.
 - J - The value reported was below the practical quantitation limit. The value is an estimate.
 - K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.
 - L - The RPD is outside of the control limits.
 - M - Hydrocarbons in the gasoline range are impacting the diesel range result.
 - M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.
 - N - Hydrocarbons in the lube oil range are impacting the diesel range result.
 - N1 - Hydrocarbons in diesel range are impacting lube oil range results.
 - O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.
 - P - The RPD of the detected concentrations between the two columns is greater than 40.
 - Q - Surrogate recovery is outside of the control limits.
 - S - Surrogate recovery data is not available due to the necessary dilution of the sample.
 - T - The sample chromatogram is not similar to a typical _____.
 - U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.
 - U1 - The practical quantitation limit is elevated due to interferences present in the sample.
 - V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.
 - W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.
 - X - Sample extract treated with a mercury cleanup procedure.
 - X1 - Sample extract treated with a Sulfuric acid/Silica gel cleanup procedure.
 - Y - The calibration verification for this analyte exceeded the 20% drift specified in method 8260C, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.
 - Z -
- ND - Not Detected at PQL
 PQL - Practical Quantitation Limit
 RPD - Relative Percent Difference



Chain of Custody

Company: ASPECT CONSULTING
Project Number: 150218
Project Name: SOUTH PARK CSO
Project Manager: CARLA BROCK
Sampled by: ERIC KNOEDLER

Turnaround Request (in working days)
(Check One)

Same Day 1 Day
 2 Days 3 Days
 Standard (7 Days)
(TPH analysis 5 Days)
 _____ (other)

Laboratory Number: **06-353**

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers
1	EB-1-4	6/27/17	0925	SOIL	5
2	EB-1-7		0945		
3	EB-1-12		0950		
4	EB-1-17		0935		
5	EB-1-22		1000		
6	EB-1-27		1005		
7	EB-1-34		1010		
8	EB-2-2		1140		
9	EB-2-8		1145		
10	EB-2-14		1155		

NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level) <u>4 PCP</u>	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	PP metals	% Moisture
	(X)	(X)					(X)	(X)									(X)	(X)
	(X)	(X)					(X)	(X)									(X)	(X)

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		ASPECT	6/29/17		ANALYSES FOR SOILS ARE TBD (X) Added 6/30/17 DB (STA)
Received		SPECTRY	6/29/17	920	
Relinquished		SPECTRY	6/29/17	1215	
Received		ORL	6/29/17	1215	
Relinquished					
Received					
Reviewed/Date		Reviewed/Date			Data Package: Standard <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input type="checkbox"/> Chromatograms with final report <input type="checkbox"/> Electronic Data Deliverables (EDDs) <input type="checkbox"/>

Chain of Custody

Company: <u>ASPECT CONSULTING</u> Project Number: <u>150218</u> Project Name: <u>SOUTH PARK CSD</u> Project Manager: <u>CARLA BROCK</u> Sampled by: <u>ERIC KNOEDLER</u>				Turnaround Request (in working days) (Check One) <input type="checkbox"/> Same Day <input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3 Days <input checked="" type="checkbox"/> Standard (7 Days) (TPH analysis 5 Days) <input type="checkbox"/> _____ (other)		Laboratory Number: 06-353																		
				Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx <input type="checkbox"/> Acid / SG Clean-up	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level) + <u>PCP</u>	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	<u>PP Metals</u>	% Moisture	
Lab ID	Sample Identification	Date Sampled	Time Sampled		Matrix																			
11	EB-2-17	6/27/17	1215		SDR	5																		
12	EB-2-22		1225																					
13	EB-2-30		1235																					
14	EB-3-2		1345																					
15	EB-3-7		1405				X	X				X	X									X	X	
16	EB-3-13		1410																					
17	EB-3-17		1420																					
18	EB-3-23		1425																					
19	EB-3-29		1435																					
20	EB-4-3		1605			X	X				X	X									X	X		
Signature		Company		Date	Time	Comments/Special Instructions																		
Relinquished		ASPECT		6/29/17		-SEE PAGE 1-																		
Received		ERICK		6/29/17	9:20																			
Relinquished		SPCCD-1		6/29/17	1215																			
Received		COSE		6/29/17	1215																			
Relinquished																								
Received																								
Reviewed/Date		Reviewed/Date				Data Package: Standard <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input type="checkbox"/> Chromatograms with final report <input type="checkbox"/> Electronic Data Deliverables (EDDs) <input type="checkbox"/>																		

Chain of Custody

Company: ASPECT CONSULTING
Project Number: 150218
Project Name: SOUTH PARK CSD
Project Manager: CARLA BROCK
Sampled by: ERIC KNOEDLER

**Turnaround Request
(in working days)**

(Check One)
 Same Day 1 Day
 2 Days 3 Days
 Standard (7 Days)
(TPH analysis 5 Days)
 _____ (other)

Number of Containers

Laboratory Number: 06-353

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-Gx/BTEX	NWTPH-Gx	NWTPH-Dx (<input type="checkbox"/> Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level) + PCP	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	DP Metals	% Moisture
21	EB-4-8	6/27/17	1610	Soil	5																			
22	EB-4-12		1615																					
23	EB-4-16		1620																					
24	EB-4-22		1630																					
25	EB-4-29		1640																					
26	EB-5-2	6/28/17	0835																					
27	EB-5-6		0840					X	X				X	X								X	X	
28	EB-5-18		0855																					
29	EB-5-23		0915																					
30	EB-5-29		0925																					

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		ASPECT	6/28/17		-SEE PAGE 1-
Received		SPERRY	6/29/17	920	
Relinquished		SPERRY	6/29/17	1245	
Received			6/29/17	1215	
Relinquished					
Received					Data Package: Standard <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input type="checkbox"/>
Reviewed/Date		Reviewed/Date			Chromatograms with final report <input type="checkbox"/> Electronic Data Deliverables (EDDs) <input type="checkbox"/>

Chain of Custody

Company: ASPELT CONSULTING
 Project Number: 150218
 Project Name: SOUTH PARK CSD
 Project Manager: CARLA BROUL
 Sampled by: ERIK KNOEDLER

Turnaround Request (in working days)

(Check One)

Same Day 1 Day
 2 Days 3 Days
 Standard (7 Days) (TPH analysis 5 Days)
 _____ (other)

Laboratory Number: 06-353

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers	NWTPH-HCID	NWTPH-GX/BTEX	NWTPH-GX	NWTPH-DX (<input type="checkbox"/> Acid / SG Clean-up)	Volatiles 8260C	Halogenated Volatiles 8260C	EDB EPA 8011 (Waters Only)	Semivolatiles 8270D/SIM (with low-level PAHs)	PAHs 8270D/SIM (low-level)	PCBs 8082A	Organochlorine Pesticides 8081B	Organophosphorus Pesticides 8270D/SIM	Chlorinated Acid Herbicides 8151A	Total RCRA Metals	Total MTCA Metals	TCLP Metals	HEM (oil and grease) 1664A	Metals (permeator)	% Moisture
31	EB-5-12	6/28/17	0850	Soil	5																			
32	EB-1-062717	6/27/17	1030	Water	1		X	X															X	
33	EB-2-062717		1200		1		X	X															X	
34	EB-3-062717		1500		1		X	X															X	
35	EB-4-062717		1655		1		X	X															X	
36	EB-5-062817	6/28/17	1120		1		X	X															X	

	Signature	Company	Date	Time	Comments/Special Instructions
Relinquished		Aspel	6/29/17		- SEE PAGE 1 -
Received		SP...	6/29/17	920	
Relinquished		ER...	6/29/17	1215	
Received		ER...	6/29/17	1215	
Relinquished					
Received					Data Package: Standard <input type="checkbox"/> Level III <input type="checkbox"/> Level IV <input type="checkbox"/>
Reviewed/Date		Reviewed/Date			Chromatograms with final report <input type="checkbox"/> Electronic Data Deliverables (EDDs) <input type="checkbox"/>

Appendix D. Preliminary COPC Screening Data and PCULs

**D-1. Initial Screening of Preliminary COPCs –
Soil Analytical Results**

**D-2. Initial Screening of Preliminary COPCs –
Groundwater Analytical Results**

**D-3. Grab Sample Groundwater Analytical
Results**

Table D-1. Initial Screening of Preliminary COPCs - Soil Analytical Results

Project 150218, West Duwamish CSO Project, Seattle, WA

Constituent (by analyte group)	Vadose Soil Screening Level ²	Saturated Soil Screening Level ³	Sample Location	EB-1	EB-2	EB-3	EB-4	EB-5	MW-4	MW-4	MW-4	MW-5	MW-5	MW-5
			Sample Date	06/27/2017	06/27/2017	06/27/2017	06/27/2017	06/28/2017	05/13/2022	05/13/2022	05/13/2022	05/13/2022	05/13/2022	05/13/2022
Sample Identification	EB-1-7	EB-2-8	EB-3-7	EB-4-3	EB-5-6	MW-4-4.5	MW-4-9.5	MW-4-12.5	MW-5-5.5	MW-5-10.5	MW-5-13			
Sample Depth (ft bgs) ¹	7	8	7	3	6	3.5-4.5	8.5-9.5	11.5-12.5	4.5-5.5	9.5-10.5	12-13			
Lithology	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Native	Fill	Fill	Native			
Saturated?	Yes	Yes	Yes	No	No	No	Yes	Yes	No	Yes	Yes			
1,2-Dichloropropane	0.016	0.0010	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
1,3,5-Trimethylbenzene	1.3	0.071	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
1,3-Dichlorobenzene	0.023	0.0013	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
1,3-Dichloropropane	0.88	0.057	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
1,4-Dichloro-2-Butene	--	--	--	--	--	--	--	< 0.0129 U	< 0.00857 U	< 0.011 U	< 0.00567 U	< 0.00674 U	< 0.00717 U	
1,4-Dichlorobenzene	0.11	0.0081	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
2,2-Dichloropropane	--	--	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
2-Butanone	20	1.4	--	--	--	--	--	< 0.0129 U	0.0125	0.0194	< 0.00567 U	0.00467 J	0.00816	
2-Chloroethyl Vinyl Ether	--	--	--	--	--	--	--	< 0.0129 U	< 0.00857 U	< 0.011 U	< 0.00567 U	< 0.00674 U	< 0.00717 U	
2-Chlorotoluene	1.9	0.11	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
2-Hexanone	--	--	--	--	--	--	--	< 0.0129 U	< 0.00857 U	< 0.011 U	< 0.00567 U	< 0.00674 U	< 0.00717 U	
2-Pentanone	--	--	--	--	--	--	--	< 0.0129 U	< 0.00857 U	< 0.011 U	< 0.00567 U	< 0.00674 U	< 0.00717 U	
4-Chlorotoluene	1.86	0.11	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
4-Methyl-2-pentanone	0.17	0.012	--	--	--	--	--	< 0.0129 U	< 0.00857 U	< 0.011 U	< 0.00567 U	< 0.00674 U	< 0.00717 U	
Acetone	29	2.1	--	--	--	--	--	0.178 J	0.31 J	0.205 J	0.0661 J	0.0983 J	0.175 J	
Acrolein	0.0044	0.00032	--	--	--	--	--	< 0.0129 U	< 0.00857 U	< 0.011 U	< 0.00567 U	< 0.00674 U	< 0.00717 U	
Acrylonitrile	0.00012	8.3E-06	--	--	--	--	--	< 0.0129 U	< 0.00857 U	< 0.011 U	< 0.00567 U	< 0.00674 U	< 0.00717 U	
Bromobenzene	0.56	0.033	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Bromochloromethane	--	--	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Bromodichloromethane	0.013	0.0009	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Bromoform	0.078	0.0050	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Bromomethane	0.051	0.0033	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Carbon Disulfide	4.1	0.25	--	--	--	--	--	0.00148 J	0.0041	0.00398	< 0.00113 U	0.00193	0.00294	
Carbon Tetrachloride	0.0029	0.00015	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Chlorobenzene	0.86	0.051	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Chloroethane	--	--	--	--	--	--	--	< 0.00515 U	< 0.00343 U	< 0.00442 U	< 0.00227 U	< 0.00269 U	< 0.00287 U	
Chloroform	0.07	0.0048	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Chloromethane	--	--	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
cis-1,2-Dichloroethene (DCE)	0.079	0.0052	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
cis-1,3-Dichloropropene	0.0023	0.00014	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Dibromochloromethane	0.010	0.0007	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Dibromomethane	0.42	0.028	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Dichlorodifluoromethane	0.013	0.0009	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Isopropylbenzene	15	0.79	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
m,p-Xylenes	--	--	< 0.048 U	< 0.044 U	< 0.065 U	< 0.055 U	< 0.043 U	< 0.00515 U	< 0.00343 U	< 0.00442 U	< 0.00227 U	< 0.00269 U	< 0.00287 U	
Methyl tert-butyl ether (MTBE)	0.10	0.0072	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	
Methylene Chloride	0.022	0.0015	--	--	--	--	--	< 0.0129 UJ	< 0.0169 UJ	< 0.011 UJ	< 0.00567 UJ	< 0.0169 UJ	< 0.0169 UJ	
Methyliodide	--	--	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U	

Table D-1. Initial Screening of Preliminary COPCs - Soil Analytical Results

Project 150218, West Duwamish CSO Project, Seattle, WA

Sample Location Sample Date Sample Identification Sample Depth (ft bgs) ¹ Lithology Saturated?	EB-1	EB-2	EB-3	EB-4	EB-5	MW-4	MW-4	MW-4	MW-5	MW-5	MW-5		
	06/27/2017 EB-1-7 7 Fill Yes	06/27/2017 EB-2-8 8 Fill Yes	06/27/2017 EB-3-7 7 Fill Yes	06/27/2017 EB-4-3 3 Fill No	06/28/2017 EB-5-6 6 Fill No	05/13/2022 MW-4-4.5 3.5-4.5 Fill No	05/13/2022 MW-4-9.5 8.5-9.5 Fill Yes	05/13/2022 MW-4-12.5 11.5-12.5 Native Yes	05/13/2022 MW-5-5.5 4.5-5.5 Fill No	05/13/2022 MW-5-10.5 9.5-10.5 Fill Yes	05/13/2022 MW-5-13 12-13 Native Yes		
Constituent (by analyte group)	Vadose Soil Screening Level ²	Saturated Soil Screening Level ³											
n-Butylbenzene	14	0.71	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U
n-Propylbenzene	16	0.88	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U
o-Xylene	--	--	< 0.048 U	< 0.044 U	< 0.065 U	< 0.055 U	< 0.043 U	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U
p-Isopropyltoluene	--	--	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U
sec-Butylbenzene	25	1.29	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U
Styrene	2	0.12	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U
tert-Butylbenzene	19	1.0	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U
Tetrachloroethene (PCE)	0.029	0.0016	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U
trans-1,2-Dichloroethene	0.52	0.032	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U
trans-1,3-Dichloropropene	0.0023	0.00014	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U
Trichloroethene (TCE)	0.0044	0.00027	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U
Trichlorofluoromethane	23	0.79	--	--	--	--	--	< 0.00515 U	< 0.00343 U	< 0.00442 U	< 0.00227 U	< 0.00269 U	< 0.00287 U
Vinyl Acetate	33	2.3	--	--	--	--	--	< 0.0129 U	< 0.00857 U	< 0.011 U	< 0.00567 U	< 0.00674 U	< 0.00717 U
Vinyl Chloride	0.0011	0.00006	--	--	--	--	--	< 0.00257 U	< 0.00171 U	< 0.00221 U	< 0.00113 U	< 0.00135 U	< 0.00143 U
Polycyclic Aromatic Hydrocarbons (PAHs)													
1-Methylnaphthalene	0.08	0.004	< 0.0081 U	< 0.0071 U	0.017	< 0.0089 U	< 0.0076 U	0.00515	0.0012	0.00066	0.00108	0.00018 J	0.00079
2-Methylnaphthalene	0.67	0.04	< 0.0081 U	< 0.0071 U	0.016	< 0.0089 U	< 0.0076 U	0.00534	0.00085	0.00081	0.00122	0.00016 J	0.00096
Acenaphthene	0.5	0.03	< 0.0081 U	< 0.0071 U	< 0.0091 U	< 0.0089 U	< 0.0076 U	0.00014 J	0.00039 J	0.00023 J	0.00303	< 0.0005 U	0.00019 J
Acenaphthylene	1.3	1.3	< 0.0081 U	< 0.0071 U	< 0.0091 U	< 0.0089 U	< 0.0076 U	0.00011 J	0.00008 J	0.00007 J	< 0.0005 UJ	< 0.0005 UJ	0.00009 J
Anthracene	0.96	0.05	< 0.0081 U	< 0.0071 U	< 0.0091 U	< 0.0089 U	< 0.0076 U	0.00033 J	0.00023 J	0.00055 J	0.00556 J	0.0001 J	0.00032 J
Benzo(g,h,i)perylene	0.67	0.67	< 0.0081 U	< 0.0071 U	< 0.0091 U	< 0.0089 U	< 0.0076 U	0.00138	0.00041 J	0.00044 J	0.00765	0.00028 J	0.00042 J
Fluoranthene	1.7	0.09	0.0099	< 0.0071 U	0.032	< 0.0089 U	< 0.0076 U	0.00158	0.00058 J	< 0.0005 UJ	0.029	0.00053 J	0.00052 J
Fluorene	0.54	0.03	< 0.0081 U	< 0.0071 U	< 0.0091 U	< 0.0089 U	< 0.0076 U	0.00048 J	0.00036 J	0.0006 J	0.0025	< 0.0005 UJ	0.00055 J
Naphthalene	0.04	0.002	< 0.0081 U	< 0.0071 U	0.019	< 0.0089 U	< 0.0076 U	0.00364	0.00051 J	0.00061	0.00075	< 0.0006 U	0.00062
Phenanthrene	1.5	1.5	0.015	< 0.0071 U	0.028	< 0.0089 U	< 0.0076 U	0.00356	0.0028	0.00188	0.0231	0.00083	0.00238
Pyrene	2.6	0.14	0.018	< 0.0071 U	0.029	< 0.0089 U	< 0.0076 U	0.00226 J	0.00121 J	0.00617	0.028 J	0.00066 J	0.00258 J
Carcinogenic PAHs (cPAH)													
Benz(a)anthracene	--	--	< 0.0081 U	< 0.0071 U	< 0.0091 U	< 0.0089 U	< 0.0076 U	0.0007	0.00031 J	0.00019 J	0.013	0.00023 J	0.00026 J
Benzo(a)pyrene	3.1E-04	1.6E-05	< 0.0081 U	< 0.0071 U	< 0.0091 U	< 0.0089 U	< 0.0076 U	0.00052 J	0.00021 J	0.00018 J	0.00959 J	0.00012 J	0.00022 J
Benzo(b)fluoranthene	--	--	< 0.0081 U	< 0.0071 U	< 0.0091 U	< 0.0089 U	< 0.0076 U	0.00091	0.00047 J	0.0005 J	0.00842	0.00032 J	0.00058
Benzo(k)fluoranthene	--	--	--	--	--	--	--	0.00029 J	0.00013 J	0.00015 J	0.00615	0.0001 J	0.00019 J
Chrysene	--	--	< 0.0081 U	< 0.0071 U	0.0092	< 0.0089 U	< 0.0076 U	0.00169	0.00096	0.00068	0.0135	0.00051	0.00104
Dibenzo(a,h)anthracene	--	--	< 0.0081 U	< 0.0071 U	< 0.0091 U	< 0.0089 U	< 0.0076 U	0.00018 J	0.00012 J	0.00023 J	0.00213	< 0.0005 U	0.00037 J
Indeno(1,2,3-cd)pyrene	--	--	< 0.0081 U	< 0.0071 U	< 0.0091 U	< 0.0089 U	< 0.0076 U	0.00044 J	0.00024 J	0.00035 J	0.00602	0.00013 J	0.00025 J
Total cPAH TEQ ⁴	3.1E-04	1.6E-05	--	--	0.0069	--	--	0.00079 J	0.00035 J	0.00033 J	0.013 J	0.00023 J	0.00040 J
Other Semivolatile Organic Compounds													
2,4,5-Trichlorophenol	4	1.1	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U
2,4,6-Trichlorophenol	0.0033	0.00019	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U
2,4-Dichlorophenol	0.069	0.0043	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U
2,4-Dimethylphenol	0.029	0.0023	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U
2,4-Dinitrophenol	0.13	0.009	--	--	--	--	--	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
2,4-Dinitrotoluene	0.0028	0.00016	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U
2,6-Dinitrotoluene	0.00092	0.00005	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U
2-Chloronaphthalene	5.4	0.28	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
2-Chlorophenol	0.20	0.011	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U

Table D-1. Initial Screening of Preliminary COPCs - Soil Analytical Results

Project 150218, West Duwamish CSO Project, Seattle, WA

Constituent (by analyte group)	Vadose Soil Screening Level ²	Saturated Soil Screening Level ³	Sample Location	EB-1	EB-2	EB-3	EB-4	EB-5	MW-4	MW-4	MW-4	MW-5	MW-5	MW-5
			Sample Date	06/27/2017	06/27/2017	06/27/2017	06/27/2017	06/28/2017	05/13/2022	05/13/2022	05/13/2022	05/13/2022	05/13/2022	05/13/2022
Sample Identification	EB-1-7	EB-2-8	EB-3-7	EB-4-3	EB-5-6	MW-4-4.5	MW-4-9.5	MW-4-12.5	MW-5-5.5	MW-5-10.5	MW-5-13			
Sample Depth (ft bgs) ¹	7	8	7	3	6	3.5-4.5	8.5-9.5	11.5-12.5	4.5-5.5	9.5-10.5	12-13			
Lithology	Fill	Fill	Fill	Fill	Fill	Fill	Fill	Native	Fill	Fill	Native			
Saturated?	Yes	Yes	Yes	No	No	No	No	Yes	No	No	Yes			
2-Methylphenol	0.069	0.006	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
2-Nitroaniline	1	0.064	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U	< 0.1 U
2-Nitrophenol	--	--	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
3,3'-Dichlorobenzidine	3.4E-05	2.0E-06	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U	< 0.1 U
3-Nitroaniline	--	--	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U	< 0.1 U
4,6-Dinitro-2-methylphenol	0.024	0.0013	--	--	--	--	--	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
4-Bromophenyl phenyl ether	--	--	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
4-Chloro-3-methylphenol	0.5	0.028	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U	< 0.1 U
4-Chloroaniline	0.0027	0.00017	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U	< 0.1 U
4-Chlorophenyl phenyl ether	--	--	--	--	--	--	--	< 0.05 U	< 0.0499 U	< 0.05 U	< 0.05 U	< 0.0499 U	< 0.05 U	< 0.05 U
4-Methylphenol	0.67	0.062	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
4-Nitroaniline	0.018	0.0013	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U	< 0.1 U
4-Nitrophenol	7	7	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U	< 0.1 U
Benzoic acid	0.65	0.17	--	--	--	--	--	< 0.2 U	0.0629 J	0.271	< 0.2 U	< 0.2 U	< 0.2 U	0.181 J
Benzyl alcohol	0.057	0.017	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Benzyl butyl phthalate	0.0036	0.00018	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Bis(2-chloro-1-methylethyl) ether	0.0035	0.00023	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Bis(2-chloroethoxy)methane	--	--	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Bis(2-chloroethyl) ether	2.20E-04	1.44E-05	--	--	--	--	--	< 0.05 U	< 0.0499 U	< 0.05 U	< 0.05 U	< 0.0499 U	< 0.05 U	< 0.05 U
Bis(2-ethylhexyl) phthalate	0.10	0.0051	--	--	--	--	--	< 0.05 UJ	< 0.0499 UJ	< 0.05 UJ	< 0.05 UJ	< 0.0499 UJ	< 0.05 UJ	< 0.05 UJ
Carbazole	--	--	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Dibenzofuran	0.54	0.029	--	--	--	--	--	0.00182	0.00055	0.00054	0.0011	< 0.0005 U	0.00049 J	< 0.0005 U
Diethyl phthalate	0.20	0.034	--	--	--	--	--	< 0.05 U	< 0.0499 U	< 0.05 U	< 0.05 U	< 0.0499 U	< 0.05 U	< 0.05 U
Dimethyl phthalate	0.071	0.019	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Di-n-butyl phthalate	0.28	0.015	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Di-n-octyl phthalate	6.2	0.33	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Hexachlorobenzene	0.000008	0.0000004	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Hexachlorobutadiene	0.00021	0.000011	--	--	--	--	--	< 0.0129 U	< 0.00857 U	< 0.011 U	< 0.00567 U	< 0.00674 U	< 0.00717 U	< 0.00717 U
Hexachlorocyclopentadiene	0.032	0.0017	--	--	--	--	--	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U	< 0.1 U
Hexachloroethane	0.00016	0.00001	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Isophorone	0.49	0.032	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Nitrobenzene	0.10	0.006	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
N-Nitroso-di-n-propylamine	0.00012	0.000007	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
N-Nitrosodiphenylamine	0.028	0.0016	--	--	--	--	--	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
Pentachlorophenol	0.000032	0.0000018	< 0.20 U	< 0.18 U	< 0.23 U	< 0.22 U	< 0.19 U	< 0.1 U	< 0.0998 U	< 0.1 U	< 0.1 U	< 0.0999 U	< 0.1 U	< 0.1 U
Phenol	0.42	0.048	--	--	--	--	--	< 0.02 U	0.0046 J	0.0225	< 0.02 U	< 0.02 U	< 0.02 U	0.0069 J

Notes:

All data in milligrams per kilogram (mg/kg)

Bold - indicates analyte detected above the laboratory reporting limit

Blue Shaded - indicates analyte detected at a concentration exceeding the applicable soil screening level. These analytes are the contaminants of potential concern (COPCs) for the remedial investigation.

COPC - contaminant of potential concern

ND - individual constituents not detected above laboratory reporting limits so a total is not calculated

Data qualifiers applied by laboratory or as a result of data validation:

U - Analyte not detected at or above Practical Quantitation Limit (PQL) shown

J - Reported value is an estimate below the PQL

UJ - Analyte not detected and the PQL is an estimate

-- - indicates results not available

¹Depth of sample collected feet (ft) below ground surface (bgs).

²Lower Duwamish Waterway (LDW) Preliminary Cleanup Levels (PCULs) for vadose soil and potable groundwater, lowest of direct contact (SL-1), protection of drinking water (SL-2), protection of surface water via groundwater (SL-3), protection of sediment via groundwater (SL-4), protection of sediment (SL-8), protection of ecological receptors (SL-9), adjusted upward to natural background (SL-10), where applicable, February 2023.

³LDW PCULs for saturated soil and potable groundwater, lowest of direct contact (SL-1), protection of drinking water (SL-5), protection of surface water via groundwater (SL-6), protection of sediment via groundwater (SL-7), protection of sediment (SL-8), and protection of ecological receptors (SL-9), adjusted upward to natural background (SL-10), where applicable, February 2023.

⁴Total cPAH benzo(a)pyrene toxic equivalent (TEQ) concentration calculated using compound-specific toxicity equivalency factors, in accordance with WAC 173-340-708(8)(e)(iii), using 1/2 the detection limit for non-detect results.

Table D-1. Initial Screening of Preliminary COPCs - Soil Analytical Results

Project 150218, West Duwamish CSO Project, Seattle, WA

Constituent (by analyte group)	Vadose Soil Screening Level ²	Saturated Soil Screening Level ³	Sample Location	MW-6	MW-6	MW-6	MW-7	MW-7	MW-7	MW-8	MW-8	MW-8
			Sample Date	05/13/2022	05/13/2022	05/13/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
			Sample Identification	MW-6-5.0	MW-6-12	MW-6-14	MW-7-4.5	MW-7-11.5	MW-7-13.5	MW-8-5.5	MW-8-9.5	MW-8-11
			Sample Depth (ft bgs) ¹	4-5	11-12	13-14	3.5-4.5	10.5-11.5	12.5-13.5	4.5-5.5	8.5-9.5	10-11
			Lithology	Fill	Fill	Native	Fill	Fill	Native	Fill	Fill	Native
			Saturated?	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
1,2-Dichloropropane	0.016	0.0010	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
1,3,5-Trimethylbenzene	1.3	0.071	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
1,3-Dichlorobenzene	0.023	0.0013	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
1,3-Dichloropropane	0.88	0.057	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
1,4-Dichloro-2-Butene	--	--	< 0.00628 U	< 0.00613 U	< 0.00746 U	< 0.00705 U	< 0.00531 U	< 0.0137 U	< 0.00802 U	< 0.00681 U	< 0.00702 U	
1,4-Dichlorobenzene	0.11	0.0081	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
2,2-Dichloropropane	--	--	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
2-Butanone	20	1.4	< 0.00628 U	0.0042 J	0.0055 J	< 0.00705 U	< 0.00531 U	0.0161	< 0.00802 U	< 0.00681 U	< 0.00702 U	
2-Chloroethyl Vinyl Ether	--	--	< 0.00628 U	< 0.00613 U	< 0.00746 U	< 0.00705 U	< 0.00531 U	< 0.0137 U	< 0.00802 U	< 0.00681 U	< 0.00702 U	
2-Chlorotoluene	1.9	0.11	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
2-Hexanone	--	--	< 0.00628 U	< 0.00613 U	< 0.00746 U	< 0.00705 U	< 0.00531 U	< 0.0137 U	< 0.00802 U	< 0.00681 U	< 0.00702 U	
2-Pentanone	--	--	< 0.00628 U	< 0.00613 U	< 0.00746 U	< 0.00705 U	< 0.00531 U	< 0.0137 U	< 0.00802 U	< 0.00681 U	< 0.00702 U	
4-Chlorotoluene	1.86	0.11	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
4-Methyl-2-pentanone	0.17	0.012	< 0.00628 U	< 0.00613 U	< 0.00746 U	< 0.00705 U	< 0.00531 U	< 0.0137 U	< 0.00802 U	< 0.00681 U	< 0.00702 U	
Acetone	29	2.1	0.068 J	0.0936 J	0.123 J	0.0747 J	0.0651 J	0.226 J	0.0983 J	0.0894 J	0.0829 J	
Acrolein	0.0044	0.00032	< 0.00628 U	< 0.00613 U	< 0.00746 U	< 0.00705 U	< 0.00531 U	< 0.0137 U	< 0.00802 U	< 0.00681 U	< 0.00702 U	
Acrylonitrile	0.00012	8.3E-06	< 0.00628 U	< 0.00613 U	< 0.00746 U	< 0.00705 U	< 0.00531 U	< 0.0137 U	< 0.00802 U	< 0.00681 U	< 0.00702 U	
Bromobenzene	0.56	0.033	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Bromochloromethane	--	--	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Bromodichloromethane	0.013	0.0009	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Bromoform	0.078	0.0050	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Bromomethane	0.051	0.0033	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Carbon Disulfide	4.1	0.25	< 0.00126 U	0.00803	0.00558	< 0.00141 U	0.00911	0.00614	< 0.0016 U	0.00558	0.00487	
Carbon Tetrachloride	0.0029	0.00015	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Chlorobenzene	0.86	0.051	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Chloroethane	--	--	< 0.00251 U	< 0.00245 U	< 0.00298 U	< 0.00282 U	< 0.00212 U	< 0.00548 U	< 0.00321 U	< 0.00272 U	< 0.00281 U	
Chloroform	0.07	0.0048	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Chloromethane	--	--	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
cis-1,2-Dichloroethene (DCE)	0.079	0.0052	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
cis-1,3-Dichloropropene	0.0023	0.00014	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Dibromochloromethane	0.010	0.0007	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Dibromomethane	0.42	0.028	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Dichlorodifluoromethane	0.013	0.0009	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Isopropylbenzene	15	0.79	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
m,p-Xylenes	--	--	< 0.00251 U	< 0.00245 U	< 0.00298 U	< 0.00282 U	< 0.00212 U	< 0.00548 U	< 0.00321 U	< 0.00272 U	< 0.00281 U	
Methyl tert-butyl ether (MTBE)	0.10	0.0072	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	
Methylene Chloride	0.022	0.0015	< 0.0169 UJ	< 0.00613 UJ	< 0.00746 UJ	< 0.0169 UJ	< 0.0169 UJ	< 0.0169 UJ	< 0.00802 UJ	< 0.0169 UJ	< 0.00702 UJ	
Methyliodide	--	--	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	

Table D-1. Initial Screening of Preliminary COPCs - Soil Analytical Results

Project 150218, West Duwamish CSO Project, Seattle, WA

		Sample Location Sample Date	MW-6 05/13/2022	MW-6 05/13/2022	MW-6 05/13/2022	MW-7 05/12/2022	MW-7 05/12/2022	MW-7 05/12/2022	MW-7 05/12/2022	MW-8 05/12/2022	MW-8 05/12/2022	MW-8 05/12/2022
		Sample Identification	MW-6-5.0	MW-6-12	MW-6-14	MW-7-4.5	MW-7-11.5	MW-7-13.5	MW-7-13.5	MW-8-5.5	MW-8-9.5	MW-8-11
		Sample Depth (ft bgs) ¹	4-5	11-12	13-14	3.5-4.5	10.5-11.5	12.5-13.5	12.5-13.5	4.5-5.5	8.5-9.5	10-11
		Lithology	Fill	Fill	Native	Fill	Fill	Native	Native	Fill	Fill	Native
		Saturated?	No	Yes	Yes	No	Yes	Yes	Yes	No	Yes	Yes
Constituent (by analyte group)	Vadose Soil Screening Level ²		Saturated Soil Screening Level ³									
	n-Butylbenzene	14	0.71	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U
n-Propylbenzene	16	0.88	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	< 0.0014 U
o-Xylene	--	--	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	< 0.0014 U
p-Isopropyltoluene	--	--	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	< 0.0014 U
sec-Butylbenzene	25	1.29	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	< 0.0014 U
Styrene	2	0.12	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	< 0.0014 U
tert-Butylbenzene	19	1.0	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	< 0.0014 U
Tetrachloroethene (PCE)	0.029	0.0016	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	< 0.0014 U
trans-1,2-Dichloroethene	0.52	0.032	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	< 0.0014 U
trans-1,3-Dichloropropene	0.0023	0.00014	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	< 0.0014 U
Trichloroethene (TCE)	0.0044	0.00027	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	< 0.0014 U
Trichlorofluoromethane	23	0.79	< 0.00251 U	< 0.00245 U	< 0.00298 U	< 0.00282 U	< 0.00212 U	< 0.00548 U	< 0.00321 U	< 0.00272 U	< 0.00281 U	< 0.00281 U
Vinyl Acetate	33	2.3	< 0.00628 U	< 0.00613 U	< 0.00746 U	< 0.00705 U	< 0.00531 U	< 0.0137 U	< 0.00802 U	< 0.00681 U	< 0.00702 U	< 0.00702 U
Vinyl Chloride	0.0011	0.00006	< 0.00126 U	< 0.00123 U	< 0.00149 U	< 0.00141 U	< 0.00106 U	< 0.00274 U	< 0.0016 U	< 0.00136 U	< 0.0014 U	< 0.0014 U
Polycyclic Aromatic Hydrocarbons (PAHs)												
1-Methylnaphthalene	0.08	0.004	0.00017 J	0.00043 J	0.0013	0.00014 J	0.00043 J	0.00041 J	0.00109	0.00589	0.00063	0.00063
2-Methylnaphthalene	0.67	0.04	0.00022 J	0.00049 J	0.00172	0.00023 J	0.00056	0.00101	0.0014	0.00447	0.00066	0.00066
Acenaphthene	0.5	0.03	0.00012 J	< 0.0005 U	0.00318	< 0.0005 U	< 0.0005 U	0.00013 J	0.00015 J	0.00153	0.00056	0.00056
Acenaphthylene	1.3	1.3	0.0001 J	0.00009 J	0.00156	< 0.0005 UJ	0.00007 J	0.00012 J	0.00012 J	0.0108	< 0.0005 UJ	< 0.0005 UJ
Anthracene	0.96	0.05	< 0.0005 UJ	0.00023 J	0.0124 J	< 0.0005 UJ	0.00017 J	0.0004 J	0.00025 J	0.00639 J	0.00027 J	0.00027 J
Benzo(g,h,i)perylene	0.67	0.67	0.00014 J	0.00115	0.00368	0.00217	0.00245	0.00038 J	0.00187	0.0231	0.00032 J	0.00032 J
Fluoranthene	1.7	0.09	< 0.0005 UJ	0.00205	0.133	0.00117	0.00203	< 0.0005 UJ	0.00224	0.0503	< 0.0005 UJ	< 0.0005 UJ
Fluorene	0.54	0.03	0.00012 J	0.00018 J	0.00788	< 0.0005 UJ	0.00015 J	0.00056 J	0.00064 J	0.00605	0.00041 J	0.00041 J
Naphthalene	0.04	0.002	< 0.0006 U	< 0.0006 U	0.003	< 0.0006 U	0.00049 J	0.00083	0.00082	0.00349	< 0.0006 U	< 0.0006 U
Phenanthrene	1.5	1.5	0.00039 J	0.00153	0.0574	0.00079	0.00157	0.00186	0.00401	0.0589	0.00227	0.00227
Pyrene	2.6	0.14	< 0.0005 UJ	0.00204 J	0.0875 J	0.00162 J	0.00248 J	0.00202 J	0.00302 J	0.0743 J	0.0009 J	0.0009 J
Carcinogenic PAHs (cPAH)												
Benz(a)anthracene	--	--	0.0001 J	0.00085	0.0186	0.00071	0.00103	0.00021 J	0.00084	0.0242	0.00026 J	0.00026 J
Benzo(a)pyrene	3.1E-04	1.6E-05	0.0001 J	0.00061 J	0.00445 J	0.00088 J	0.00128 J	0.00012 J	0.00083 J	0.0303 J	0.00019 J	0.00019 J
Benzo(b)fluoranthene	--	--	0.00017 J	0.00112	0.00929	0.00133	0.00144	0.00051	0.00143	0.0199	0.00044 J	0.00044 J
Benzo(k)fluoranthene	--	--	< 0.0005 U	0.0006	0.00491	0.00043 J	0.00048 J	0.00056	0.00038 J	0.0123	< 0.0005 U	< 0.0005 U
Chrysene	--	--	0.00026 J	0.00143	0.0308	0.00254	0.00305	0.00067	0.002	0.0355	0.00093	0.00093
Dibenzo(a,h)anthracene	--	--	< 0.0005 U	0.00039 J	0.00066	0.00021 J	0.00029 J	0.0003 J	0.00027 J	0.00689	< 0.0005 U	< 0.0005 U
Indeno(1,2,3-cd)pyrene	--	--	< 0.0005 U	0.00071	0.00334	0.00077	0.00073	0.00032 J	0.00068	0.0192	0.0001 J	0.0001 J
Total cPAH TEQ ⁴	3.1E-04	1.6E-05	0.00020 J	0.00099 J	0.0084 J	0.0013 J	0.0017 J	0.00032 J	0.0012 J	0.039 J	0.00033 J	0.00033 J
Other Semivolatile Organic Compounds												
2,4,5-Trichlorophenol	4	1.1	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U	< 0.0999 U
2,4,6-Trichlorophenol	0.0033	0.00019	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U	< 0.0999 U
2,4-Dichlorophenol	0.069	0.0043	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U	< 0.0999 U
2,4-Dimethylphenol	0.029	0.0023	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U	< 0.0999 U
2,4-Dinitrophenol	0.13	0.009	< 0.2 U	< 0.199 U	< 0.199 U	< 0.2 U	< 0.2 U	< 0.199 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.2 U
2,4-Dinitrotoluene	0.0028	0.00016	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U	< 0.0999 U
2,6-Dinitrotoluene	0.00092	0.00005	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U	< 0.0999 U
2-Chloronaphthalene	5.4	0.28	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U
2-Chlorophenol	0.20	0.011	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U

Table D-1. Initial Screening of Preliminary COPCs - Soil Analytical Results

Project 150218, West Duwamish CSO Project, Seattle, WA

Constituent (by analyte group)	Vadose Soil Screening Level ²	Saturated Soil Screening Level ³	Sample Location	MW-6	MW-6	MW-6	MW-7	MW-7	MW-7	MW-8	MW-8	MW-8
			Sample Date	05/13/2022	05/13/2022	05/13/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022	05/12/2022
			Sample Identification	MW-6-5.0	MW-6-12	MW-6-14	MW-7-4.5	MW-7-11.5	MW-7-13.5	MW-8-5.5	MW-8-9.5	MW-8-11
			Sample Depth (ft bgs) ¹	4-5	11-12	13-14	3.5-4.5	10.5-11.5	12.5-13.5	4.5-5.5	8.5-9.5	10-11
			Lithology	Fill	Fill	Native	Fill	Fill	Native	Fill	Fill	Native
			Saturated?	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
2-Methylphenol	0.069	0.006	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
2-Nitroaniline	1	0.064	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U
2-Nitrophenol	--	--	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
3,3'-Dichlorobenzidine	3.4E-05	2.0E-06	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U
3-Nitroaniline	--	--	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U
4,6-Dinitro-2-methylphenol	0.024	0.0013	< 0.2 U	< 0.199 U	< 0.199 U	< 0.2 U	< 0.2 U	< 0.2 U	< 0.199 U	< 0.2 U	< 0.2 U	< 0.2 U
4-Bromophenyl phenyl ether	--	--	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
4-Chloro-3-methylphenol	0.5	0.028	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U
4-Chloroaniline	0.0027	0.00017	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U
4-Chlorophenyl phenyl ether	--	--	< 0.0499 U	< 0.0499 U	< 0.0498 U	< 0.0499 U	< 0.0499 U	< 0.0499 U	< 0.0499 U	< 0.0499 U	< 0.0499 U	< 0.05 U
4-Methylphenol	0.67	0.062	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
4-Nitroaniline	0.018	0.0013	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U
4-Nitrophenol	7	7	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0999 U
Benzoic acid	0.65	0.17	< 0.2 U	< 0.199 U	0.0899 J	< 0.2 U	< 0.2 U	< 0.2 U	0.346	< 0.2 U	< 0.2 U	0.0403 J
Benzyl alcohol	0.057	0.017	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
Benzyl butyl phthalate	0.0036	0.00018	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
Bis(2-chloro-1-methylethyl) ether	0.0035	0.00023	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
Bis(2-chloroethoxy)methane	--	--	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
Bis(2-chloroethyl) ether	2.20E-04	1.44E-05	< 0.0499 U	< 0.0499 U	< 0.0498 U	< 0.0499 U	< 0.0499 U	< 0.0499 U	< 0.0499 U	< 0.0499 U	< 0.0499 U	< 0.05 U
Bis(2-ethylhexyl) phthalate	0.10	0.0051	< 0.0499 UJ	0.013 J	< 0.0498 UJ	0.0124 J	0.0463 J	< 0.0499 UJ	< 0.0499 UJ	< 0.0499 UJ	< 0.0499 UJ	< 0.05 UJ
Carbazole	--	--	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
Dibenzofuran	0.54	0.029	0.00015 J	0.00028 J	0.00253	< 0.0005 U	0.00023 J	0.00071	0.00066	0.00319	0.00035 J	
Diethyl phthalate	0.20	0.034	< 0.0499 U	< 0.0499 U	< 0.0498 U	< 0.0499 U	< 0.0499 U	0.0375 J	< 0.0499 U	< 0.0499 U	< 0.0499 U	< 0.05 U
Dimethyl phthalate	0.071	0.019	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
Di-n-butyl phthalate	0.28	0.015	< 0.02 U	0.0108 J	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
Di-n-octyl phthalate	6.2	0.33	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
Hexachlorobenzene	0.000008	0.0000004	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
Hexachlorobutadiene	0.00021	0.000011	< 0.00628 U	< 0.00613 U	< 0.00746 U	< 0.00705 U	< 0.00531 U	< 0.0137 U	< 0.00802 U	< 0.00681 U	< 0.00702 U	
Hexachlorocyclopentadiene	0.032	0.0017	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0998 U	< 0.0999 U
Hexachloroethane	0.00016	0.00001	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
Isophorone	0.49	0.032	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
Nitrobenzene	0.10	0.006	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
N-Nitroso-di-n-propylamine	0.00012	0.000007	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
N-Nitrosodiphenylamine	0.028	0.0016	< 0.02 U	< 0.0199 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U	< 0.0199 U	< 0.02 U	< 0.02 U	< 0.02 U
Pentachlorophenol	0.000032	0.0000018	< 0.0998 U	< 0.0997 U	< 0.0996 U	< 0.0998 U	< 0.0998 U	< 0.0997 U	< 0.0998 U	< 0.0998 U	< 0.0998 U	< 0.0999 U
Phenol	0.42	0.048	< 0.02 U	< 0.0199 U	0.0051 J	< 0.02 U	< 0.02 U	0.0114 J	< 0.02 U	< 0.02 U	< 0.02 U	< 0.02 U

Notes:

- All data in milligrams per kilogram (mg/kg)
- Blue Shaded** - indicates analyte detected above the laboratory reporting limit
- Blue Shaded** - indicates analyte detected at a concentration exceeding the applicable soil screening level. These analytes are the contaminants of potential concern (COPCs) for the remedial investigation.
- COPC - contaminant of potential concern
- ND - individual constituents not detected above laboratory reporting limits so a total is not calculated
- Data qualifiers applied by laboratory or as a result of data validation:
 - U - Analyte not detected at or above Practical Quantitation Limit (PQL) shown
 - J - Reported value is an estimate below the PQL
 - UJ - Analyte not detected and the PQL is an estimate
- "-" - indicates results not available
- ¹Depth of sample collected feet (ft) below ground surface (bgs).
- ²Lower Duwamish Waterway (LDW) Preliminary Cleanup Levels (PCULs) for vadose soil and potable groundwater, lowest of direct contact (SL-1), protection of drinking water (SL-2), protection of surface water via groundwater (SL-3), protection of sediment via groundwater (SL-4), protection of sediment (SL-8), protection of ecological receptors (SL-9), adjusted upward to natural background (SL-10), where applicable, February 2023.
- ³LDW PCULs for saturated soil and potable groundwater, lowest of direct contact (SL-1), protection of drinking water (SL-5), protection of surface water via groundwater (SL-6), protection of sediment via groundwater (SL-7), protection of sediment (SL-8), and protection of ecological receptors (SL-9), adjusted upward to natural background (SL-10), where applicable, February 2023.
- ⁴Total cPAH benzo(a)pyrene toxic equivalent (TEQ) concentration calculated using compound-specific toxicity equivalency factors, in accordance with WAC 173-340-708(8)(e)(iii), using 1/2 the detection limit for non-detect results.

Table D-3. Grab Sample Groundwater Analytical Results

Project No. 150218-A, West Duwamish CSO Project, Seattle, Washington

Sample Location Sample Date Sample Identification	EB-1 06/27/2017 EB-1-062717	EB-2 06/27/2017 EB-2-062717	EB-3 06/27/2017 EB-3-062717	EB-4 06/27/2017 EB-4-062717	EB-5 06/28/2017 EB-5-062817
Constituent (by analyte group)					
Total Petroleum Hydrocarbons					
Gasoline-Range Organics	< 100 U	< 100 U	< 100 U	< 100 U	< 100 U
Diesel-Range Organics	< 270 U	< 280 U	< 280 U	< 280 U	< 290 U
Motor Oil-Range Organics	< 440 U	< 440 U	< 440 U	< 440 U	< 460 U
Diesel and Oil Extended-Range Organics	--	--	--	--	--
Benzene, toluene, ethylbenzene, and xylenes					
Benzene	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Toluene	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Ethylbenzene	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Total Xylenes	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U	< 1.0 U
Metals					
Antimony, dissolved	--	--	--	--	--
Antimony, total	< 5.6 U	< 5.6 U	< 5.6 U	< 5.6 U	< 5.6 U
Arsenic, dissolved	--	--	--	--	--
Arsenic, total	28	5.4	< 3.3 U	5.6	< 3.3 U
Beryllium, dissolved	--	--	--	--	--
Beryllium, total	< 11 U	< 11 U	< 11 U	< 11 U	< 11 U
Cadmium, dissolved	--	--	--	--	--
Cadmium, total	< 4.4 U	< 4.4 U	< 4.4 U	< 4.4 U	< 4.4 U
Chromium, dissolved	--	--	--	--	--
Chromium, total	150	18	14	24	21
Copper, dissolved	--	--	--	--	--
Copper, total	150	29	19	34	35
Lead, dissolved	--	--	--	--	--
Lead, total	45	4.7	2.3	3.8	4.1
Mercury, dissolved	--	--	--	--	--
Mercury, total	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U	< 0.50 U
Nickel, dissolved	--	--	--	--	--
Nickel, total	69	< 22 U	< 22 U	< 22 U	< 22 U
Selenium, dissolved	--	--	--	--	--
Selenium, total	< 5.6 U	< 5.6 U	< 5.6 U	< 5.6 U	< 5.6 U
Silver, dissolved	--	--	--	--	--
Silver, total	< 11 U	< 11 U	< 11 U	< 11 U	< 11 U
Thallium, dissolved	--	--	--	--	--
Thallium, total	< 5.6 U	< 5.6 U	< 5.6 U	< 5.6 U	< 5.6 U
Zinc, dissolved	--	--	--	--	--
Zinc, total	240	36	< 28 U	28	44

Notes:

All results in micrograms per liter, unless indicated otherwise.

Bold - Indicates analyte detected above the laboratory reporting limit.

Data qualifiers applied by laboratory:

U - Analyte not detected at or above Practical Quantitation Limit (PQL) shown

As discussed in Section 2.3.3. of the RI Report, these data were used to plan and scope subsequent investigation work that included the installation and sampling of permanent monitoring wells. These data are not considered representative of groundwater quality at the Project Property.

Appendix E. Backup for Arsenic and Chromium Statistical Analysis

Table E-1. Metals Dataset and Results of Statistical Analysis

Soil Sample Identification	Arsenic (mg/kg)	Chromium (mg/kg)
EB-1-7 ¹	--	16
EB-2-8 ¹	--	14
EB-3-7 ¹	--	16
EB-4-3 ¹	--	63
EB-5-6 ¹	--	14
MW-4-4.5	3.15	57.2
MW-4-9.5	4.62	14.7
MW-4-12.5	7.04	14.3
MW-5-5.5	4.77	43.6
MW-5-10.5	1.74	7.9
MW-5-13	5.80	15.3
MW-6-5.0	1.62	7.86
MW-6-12	1.73	10.1
MW-6-14	3.75	14.4
MW-7-4.5	1.85	8.67
MW-7-11.5	1.76	8.77
MW-7-13.5	11.50	21.8
MW-8-5.5	5.95	52.2
MW-8-9.5	2.46	9.61
MW-8-11	12.60	12.7
Minimum Detected Concentration	1.62	7.86
Maximum Detected Concentration	12.6	63
Site-Specific Cleanup Level	7.3	48
Frequency of Exceedance	13%	15%
Magnitude of Exceedance	1.7	1.3
95% UCL (see backup)	7.3	33

Data in milligrams per kilogram (mg/kg)

See Table 4 for full dataset and additional detail on samples.

¹The arsenic results for these samples were all non-detect with elevated reporting limits and not included in the statistical data evaluation.

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2	User Selected Options											
3	Date/Time of Computation		ProUCL 5.15/10/2023 12:42:14 PM									
4			From File	WorkSheet.xls								
5			Full Precision	OFF								
6												
7												
8	Dixon's Outlier Test for Arsenic											
9												
10	Number of Observations = 15											
11	10% critical value: 0.472											
12	5% critical value: 0.525											
13	1% critical value: 0.616											
14												
15	1. Observation Value 12.6 is a Potential Outlier (Upper Tail)?											
16												
17	Test Statistic: 0.512											
18												
19	For 10% significance level, 12.6 is an outlier.											
20	For 5% significance level, 12.6 is not an outlier.											
21	For 1% significance level, 12.6 is not an outlier.											
22												
23	2. Observation Value 1.62 is a Potential Outlier (Lower Tail)?											
24												
25	Test Statistic: 0.022											
26												
27	For 10% significance level, 1.62 is not an outlier.											
28	For 5% significance level, 1.62 is not an outlier.											
29	For 1% significance level, 1.62 is not an outlier.											
30												

A	B	C	D	E	F	G	H	I	J	K	L
1			Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects								
2	User Selected Options										
3	Date/Time of Computation		ProUCL 5.15/11/2023 11:53:23 AM								
4	From File		WorkSheet.xls								
5	Full Precision		OFF								
6	Confidence Coefficient		0.95								
7											
8											
9	Arsenic										
10											
11	Raw Statistics										
12	Number of Valid Observations			15							
13	Number of Distinct Observations			15							
14	Minimum			1.62							
15	Maximum			12.6							
16	Mean of Raw Data			4.689							
17	Standard Deviation of Raw Data			3.475							
18	Khat			2.306							
19	Theta hat			2.034							
20	Kstar			1.889							
21	Theta star			2.482							
22	Mean of Log Transformed Data			1.313							
23	Standard Deviation of Log Transformed Data			0.697							
24											
25	Normal GOF Test Results										
26											
27	Correlation Coefficient R			0.911							
28	Shapiro Wilk Test Statistic			0.823							
29	Shapiro Wilk Critical (0.05) Value			0.881							
30	Approximate Shapiro Wilk P Value			0.00759							
31	Lilliefors Test Statistic			0.189							
32	Lilliefors Critical (0.05) Value			0.22							
33	Data appear Approximate Normal at (0.05) Significance Level										
34											
35	Gamma GOF Test Results										
36											
37	Correlation Coefficient R			0.976							
38	A-D Test Statistic			0.545							
39	A-D Critical (0.05) Value			0.746							
40	K-S Test Statistic			0.172							
41	K-S Critical(0.05) Value			0.224							
42	Data appear Gamma Distributed at (0.05) Significance Level										
43											
44	Lognormal GOF Test Results										
45											
46	Correlation Coefficient R			0.965							
47	Shapiro Wilk Test Statistic			0.912							
48	Shapiro Wilk Critical (0.05) Value			0.881							
49	Approximate Shapiro Wilk P Value			0.197							
50	Lilliefors Test Statistic			0.175							
51	Lilliefors Critical (0.05) Value			0.22							
52	Data appear Lognormal at (0.05) Significance Level										

A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Uncensored Full Data Sets										
2											
3	User Selected Options										
4	Date/Time of Computation		ProUCL 5.15/11/2023 11:53:38 AM								
5	From File		WorkSheet.xls								
6	Full Precision		OFF								
7	Confidence Coefficient		95%								
8	Number of Bootstrap Operations		2000								
9											
10											
11	Arsenic										
12											
13	General Statistics										
14	Total Number of Observations			15		Number of Distinct Observations			15		
15							Number of Missing Observations			0	
16	Minimum			1.62		Mean			4.689		
17	Maximum			12.6		Median			3.75		
18	SD			3.475		Std. Error of Mean			0.897		
19	Coefficient of Variation			0.741		Skewness			1.342		
20											
21	Normal GOF Test										
22	Shapiro Wilk Test Statistic			0.823		Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value			0.881		Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic			0.189		Lilliefors GOF Test					
25	5% Lilliefors Critical Value			0.22		Data appear Normal at 5% Significance Level					
26	Data appear Approximate Normal at 5% Significance Level										
27											
28	Assuming Normal Distribution										
29	95% Normal UCL					95% UCLs (Adjusted for Skewness)					
30	95% Student's-t UCL			6.27		95% Adjusted-CLT UCL (Chen-1995)			6.497		
31						95% Modified-t UCL (Johnson-1978)			6.321		
32											
33	Gamma GOF Test										
34	A-D Test Statistic			0.545		Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value			0.746		Detected data appear Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic			0.172		Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value			0.224		Detected data appear Gamma Distributed at 5% Significance Level					
38	Detected data appear Gamma Distributed at 5% Significance Level										
39											
40	Gamma Statistics										
41	k hat (MLE)			2.306		k star (bias corrected MLE)			1.889		
42	Theta hat (MLE)			2.034		Theta star (bias corrected MLE)			2.482		
43	nu hat (MLE)			69.18		nu star (bias corrected)			56.68		
44	MLE Mean (bias corrected)			4.689		MLE Sd (bias corrected)			3.412		
45						Approximate Chi Square Value (0.05)			40.37		
46	Adjusted Level of Significance			0.0324		Adjusted Chi Square Value			38.68		
47											
48	Assuming Gamma Distribution										
49	95% Approximate Gamma UCL (use when n>=50))			6.583		95% Adjusted Gamma UCL (use when n<50)			6.871		
50											
51	Lognormal GOF Test										
52	Shapiro Wilk Test Statistic			0.912		Shapiro Wilk Lognormal GOF Test					

	A	B	C	D	E	F	G	H	I	J	K	L
53	5% Shapiro Wilk Critical Value					0.881	Data appear Lognormal at 5% Significance Level					
54	Lilliefors Test Statistic					0.175	Lilliefors Lognormal GOF Test					
55	5% Lilliefors Critical Value					0.22	Data appear Lognormal at 5% Significance Level					
56	Data appear Lognormal at 5% Significance Level											
57												
58	Lognormal Statistics											
59	Minimum of Logged Data					0.482	Mean of logged Data					1.313
60	Maximum of Logged Data					2.534	SD of logged Data					0.697
61												
62	Assuming Lognormal Distribution											
63	95% H-UCL					7.275	90% Chebyshev (MVUE) UCL					7.291
64	95% Chebyshev (MVUE) UCL					8.489	97.5% Chebyshev (MVUE) UCL					10.15
65	99% Chebyshev (MVUE) UCL					13.41						
66												
67	Nonparametric Distribution Free UCL Statistics											
68	Data appear to follow a Discernible Distribution at 5% Significance Level											
69												
70	Nonparametric Distribution Free UCLs											
71	95% CLT UCL					6.165	95% Jackknife UCL					6.27
72	95% Standard Bootstrap UCL					6.138	95% Bootstrap-t UCL					7.1
73	95% Hall's Bootstrap UCL					7.69	95% Percentile Bootstrap UCL					6.243
74	95% BCA Bootstrap UCL					6.433						
75	90% Chebyshev(Mean, Sd) UCL					7.381	95% Chebyshev(Mean, Sd) UCL					8.6
76	97.5% Chebyshev(Mean, Sd) UCL					10.29	99% Chebyshev(Mean, Sd) UCL					13.62
77												
78	Suggested UCL to Use											
79	95% Student's-t UCL					6.27						
80												
81	When a data set follows an approximate (e.g., normal) distribution passing one of the GOF test											
82	When applicable, it is suggested to use a UCL based upon a distribution (e.g., gamma) passing both GOF tests in ProUCL											
83												
84	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.											
85	Recommendations are based upon data size, data distribution, and skewness.											
86	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).											
87	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.											
88												

A	B	C	D	E	F	G	H	I	J	K	L
1				Goodness-of-Fit Test Statistics for Uncensored Full Data Sets without Non-Detects							
2	User Selected Options										
3	Date/Time of Computation		ProUCL 5.17/12/2023 10:17:34 AM								
4	From File		WorkSheet.xls								
5	Full Precision		OFF								
6	Confidence Coefficient		0.95								
7											
8											
9	Chromium										
10											
11	Raw Statistics										
12	Number of Valid Observations			21							
13	Number of Distinct Observations			19							
14	Minimum			7.86							
15	Maximum			63							
16	Mean of Raw Data			20.57							
17	Standard Deviation of Raw Data			17.25							
18	Khat			2.224							
19	Theta hat			9.247							
20	Kstar			1.938							
21	Theta star			10.61							
22	Mean of Log Transformed Data			2.782							
23	Standard Deviation of Log Transformed Data			0.654							
24											
25	Normal GOF Test Results										
26											
27	Correlation Coefficient R			0.828							
28	Shapiro Wilk Test Statistic			0.684							
29	Shapiro Wilk Critical (0.05) Value			0.908							
30	Approximate Shapiro Wilk P Value			5.4554E-6							
31	Lilliefors Test Statistic			0.366							
32	Lilliefors Critical (0.05) Value			0.188							
33	Data not Normal at (0.05) Significance Level										
34											
35	Gamma GOF Test Results										
36											
37	Correlation Coefficient R			0.925							
38	A-D Test Statistic			1.953							
39	A-D Critical (0.05) Value			0.753							
40	K-S Test Statistic			0.314							
41	K-S Critical(0.05) Value			0.192							
42	Data not Gamma Distributed at (0.05) Significance Level										
43											
44	Lognormal GOF Test Results										
45											
46	Correlation Coefficient R			0.92							
47	Shapiro Wilk Test Statistic			0.837							
48	Shapiro Wilk Critical (0.05) Value			0.908							
49	Approximate Shapiro Wilk P Value			0.00187							
50	Lilliefors Test Statistic			0.268							
51	Lilliefors Critical (0.05) Value			0.188							
52	Data not Lognormal at (0.05) Significance Level										

	A	B	C	D	E	F	G	H	I	J	K	L	
53													
54	Non-parametric GOF Test Results												
55													
56	Data do not follow a discernible distribution at (0.05) Level of Significance												

	A	B	C	D	E	F	G	H	I	J	K	L
1					Outlier Tests for Selected Uncensored Variables							
2	User Selected Options											
3	Date/Time of Computation		ProUCL 5.17/12/2023 10:17:18 AM									
4			From File	WorkSheet.xls								
5			Full Precision	OFF								
6												
7												
8	Dixon's Outlier Test for Chromium											
9												
10	Number of Observations = 21											
11	10% critical value: 0.391											
12	5% critical value: 0.44											
13	1% critical value: 0.524											
14												
15	1. Observation Value 63 is a Potential Outlier (Upper Tail)?											
16												
17	Test Statistic: 0.199											
18												
19	For 10% significance level, 63 is not an outlier.											
20	For 5% significance level, 63 is not an outlier.											
21	For 1% significance level, 63 is not an outlier.											
22												
23	2. Observation Value 7.86 is a Potential Outlier (Lower Tail)?											
24												
25	Test Statistic: 0.018											
26												
27	For 10% significance level, 7.86 is not an outlier.											
28	For 5% significance level, 7.86 is not an outlier.											
29	For 1% significance level, 7.86 is not an outlier.											
30												

A	B	C	D	E	F	G	H	I	J	K	L
1	UCL Statistics for Uncensored Full Data Sets										
2											
3	User Selected Options										
4	Date/Time of Computation		ProUCL 5.17/12/2023 10:17:50 AM								
5	From File		WorkSheet.xls								
6	Full Precision		OFF								
7	Confidence Coefficient		95%								
8	Number of Bootstrap Operations		2000								
9											
10											
11	Chromium										
12											
13	General Statistics										
14	Total Number of Observations			21		Number of Distinct Observations			19		
15						Number of Missing Observations			0		
16	Minimum			7.86		Mean			20.57		
17	Maximum			63		Median			14.3		
18	SD			17.25		Std. Error of Mean			3.764		
19	Coefficient of Variation			0.839		Skewness			1.682		
20											
21	Normal GOF Test										
22	Shapiro Wilk Test Statistic			0.684		Shapiro Wilk GOF Test					
23	5% Shapiro Wilk Critical Value			0.908		Data Not Normal at 5% Significance Level					
24	Lilliefors Test Statistic			0.366		Lilliefors GOF Test					
25	5% Lilliefors Critical Value			0.188		Data Not Normal at 5% Significance Level					
26	Data Not Normal at 5% Significance Level										
27											
28	Assuming Normal Distribution										
29	95% Normal UCL					95% UCLs (Adjusted for Skewness)					
30	95% Student's-t UCL			27.06		95% Adjusted-CLT UCL (Chen-1995)			28.24		
31						95% Modified-t UCL (Johnson-1978)			27.29		
32											
33	Gamma GOF Test										
34	A-D Test Statistic			1.953		Anderson-Darling Gamma GOF Test					
35	5% A-D Critical Value			0.753		Data Not Gamma Distributed at 5% Significance Level					
36	K-S Test Statistic			0.314		Kolmogorov-Smirnov Gamma GOF Test					
37	5% K-S Critical Value			0.192		Data Not Gamma Distributed at 5% Significance Level					
38	Data Not Gamma Distributed at 5% Significance Level										
39											
40	Gamma Statistics										
41	k hat (MLE)			2.224		k star (bias corrected MLE)			1.938		
42	Theta hat (MLE)			9.247		Theta star (bias corrected MLE)			10.61		
43	nu hat (MLE)			93.42		nu star (bias corrected)			81.41		
44	MLE Mean (bias corrected)			20.57		MLE Sd (bias corrected)			14.77		
45						Approximate Chi Square Value (0.05)			61.62		
46	Adjusted Level of Significance			0.0383		Adjusted Chi Square Value			60.3		
47											
48	Assuming Gamma Distribution										
49	95% Approximate Gamma UCL (use when n>=50))			27.18		95% Adjusted Gamma UCL (use when n<50)			27.77		
50											
51	Lognormal GOF Test										
52	Shapiro Wilk Test Statistic			0.837		Shapiro Wilk Lognormal GOF Test					

	A	B	C	D	E	F	G	H	I	J	K	L	
53	5% Shapiro Wilk Critical Value				0.908	Data Not Lognormal at 5% Significance Level							
54	Lilliefors Test Statistic				0.268	Lilliefors Lognormal GOF Test							
55	5% Lilliefors Critical Value				0.188	Data Not Lognormal at 5% Significance Level							
56	Data Not Lognormal at 5% Significance Level												
57													
58	Lognormal Statistics												
59	Minimum of Logged Data				2.062	Mean of logged Data				2.782			
60	Maximum of Logged Data				4.143	SD of logged Data				0.654			
61													
62	Assuming Lognormal Distribution												
63	95% H-UCL				27.39	90% Chebyshev (MVUE) UCL				28.77			
64	95% Chebyshev (MVUE) UCL				32.85	97.5% Chebyshev (MVUE) UCL				38.5			
65	99% Chebyshev (MVUE) UCL				49.61								
66													
67	Nonparametric Distribution Free UCL Statistics												
68	Data do not follow a Discernible Distribution (0.05)												
69													
70	Nonparametric Distribution Free UCLs												
71	95% CLT UCL				26.76	95% Jackknife UCL				27.06			
72	95% Standard Bootstrap UCL				26.61	95% Bootstrap-t UCL				29.86			
73	95% Hall's Bootstrap UCL				26.13	95% Percentile Bootstrap UCL				26.41			
74	95% BCA Bootstrap UCL				28.15								
75	90% Chebyshev(Mean, Sd) UCL				31.86	95% Chebyshev(Mean, Sd) UCL				36.98			
76	97.5% Chebyshev(Mean, Sd) UCL				44.08	99% Chebyshev(Mean, Sd) UCL				58.02			
77													
78	Suggested UCL to Use												
79	95% Chebyshev (Mean, Sd) UCL				36.98								
80													
81	Note: Suggestions regarding the selection of a 95% UCL are provided to help the user to select the most appropriate 95% UCL.												
82	Recommendations are based upon data size, data distribution, and skewness.												
83	These recommendations are based upon the results of the simulation studies summarized in Singh, Maichle, and Lee (2006).												
84	However, simulations results will not cover all Real World data sets; for additional insight the user may want to consult a statistician.												
85													

Appendix F. Report Limitations and Guidelines for Use

REPORT LIMITATIONS AND USE GUIDELINES

Reliance Conditions for Third Parties

This report was prepared for the exclusive use of the Client. No other party may rely on this report or the product of our services without the express written consent of Aspect Consulting, LLC (Aspect). This limitation is to provide our firm with reasonable protection against liability claims by third parties with whom there would otherwise be no contractual conditions or limitations and guidelines governing their use of the report. Within the limitations of scope, schedule and budget, our services have been executed in accordance with our Agreement with the Client and recognized standards of professionals in the same locality and involving similar conditions.

Services for Specific Purposes, Persons and Projects

Aspect has performed the services in general accordance with the scope and limitations of our Agreement. This report has been prepared for the exclusive use of the Client and their authorized third parties, approved in writing by Aspect. This report is not intended for use by others, and the information contained herein is not applicable to other properties.

This report is not, and should not, be construed as a warranty or guarantee regarding the presence or absence of hazardous substances or petroleum products that may affect the subject property. The report is not intended to make any representation concerning title or ownership to the subject property. If real property records were reviewed, they were reviewed for the sole purpose of determining the subject property's historical uses. All findings, conclusions, and recommendations stated in this report are based on the data and information provided to Aspect, current use of the subject property, and observations and conditions that existed on the date and time of the report.

Aspect structures its services to meet the specific needs of our clients. Because each environmental study is unique, each environmental report is unique, prepared solely for the specific client and subject property. This report should not be applied for any purpose or project except the purpose described in the Agreement.

This Report Is Project-Specific

Aspect considered a number of unique, project-specific factors when establishing the Scope of Work for this project and report. You should not rely on this report if it was:

- Not prepared for you
- Not prepared for the specific purpose identified in the Agreement
- Not prepared for the specific real property assessed
- Completed before important changes occurred concerning the subject property, project or governmental regulatory actions

If changes are made to the project or subject property after the date of this report, Aspect should be retained to assess the impact of the changes with respect to the conclusions contained in the report.

Geoscience Interpretations

The geoscience practices (geotechnical engineering, geology, and environmental science) require interpretation of spatial information that can make them less exact than other engineering and natural science disciplines. It is important to recognize this limitation in evaluating the content of the report. If you are unclear how these "Report Limitations and Use Guidelines" apply to your project or site, you should contact Aspect.

Discipline-Specific Reports Are Not Interchangeable

The equipment, techniques and personnel used to perform an environmental study differ significantly from those used to perform a geotechnical or geologic study and vice versa. For that reason, a geotechnical engineering or geologic report does not usually address any environmental findings, conclusions or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Similarly, environmental reports are not used to address geotechnical or geologic concerns regarding the subject property.

Environmental Regulations Are Not Static

Some hazardous substances or petroleum products may be present near the subject property in quantities or under conditions that may have led, or may lead, to contamination of the subject property, but are not included in current local, state or federal regulatory definitions of hazardous substances or petroleum products or do not otherwise present potential liability. Changes may occur in the standards for appropriate inquiry or regulatory definitions of hazardous substance and petroleum products; therefore, this report has a limited useful life.

Property Conditions Change Over Time

This report is based on conditions that existed at the time the study was performed. The findings and conclusions of this report may be affected by the passage of time (for example, Phase I ESA reports are applicable for 180 days), by events such as a change in property use or occupancy, or by natural events, such as floods, earthquakes, slope failure or groundwater fluctuations. If more than six months have passed since issuance of our report, or if any of the described events may have occurred following the issuance of the report, you should contact Aspect so that we may evaluate whether changed conditions affect the continued reliability or applicability of our conclusions and recommendations.

Historical Information Provided by Others

Aspect has relied upon information provided by others in our description of historical conditions and in our review of regulatory databases and files. The available data does not provide definitive information with regard to all past uses, operations or incidents affecting the subject property or adjacent properties. Aspect makes no warranties or guarantees regarding the accuracy or completeness of information provided or compiled by others.